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(Vol.2.)

REMARKS

ON

HYDROPHOBIA,

&c.

REMARKS

ON

HYDROPHOBIA;

OR THE

DISEASE

PRODUCED BY THE

BITE of a MAD DOG,

OR OTHER

RABID ANIMAL.

ROYAL MEDICAL SOCIETY LONDON

By ROBERT HAMILTON, M. D.

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OF THE ROYAL MEDICAL AND PHYSICAL SOCIETIES, EDINBURGH;
OF THE MEDICAL SOCIETY, LONDON;
AND LATE PHYSICIAN TO THE ARMY.

IN TWO VOLUMES.

THE SECOND EDITION, WITH ADDITIONS AND CORRECTIONS.

Morsu virus habent, et fatum dente minantur. LUCAN. PHARSAL.
Aliorum factis, nobis quod ex usu sit admonemur. CRATO.

VOL. II.

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REMARKS

ON

HYDROPHOBIA;

OR THE

DISEASE

PRODUCED BY THE

BITE of a MAD DOG,

OR OTHER

RABID ANIMAL.

TO THE READER.

THIS volume is extended by the Appendix annexed to a greater length than was at firſt intended; but conceiving the various caſes collected, arranged, epitomiſed, and brought into one point under the reader's view, to be not the leaſt valuable part of the work, though at a conſiderable additional expence, I ſhould have thought myſelf blameable not to have preſented him with them. Should I be accuſed of diffuſeneſs in other parts, my apology is much of the ſame kind; I ſacrifice my private intereſt to his accommodation.

I have endeavoured to offer ſomething to three claſſes of readers; the medical pathologiſt and practitioner already eſtabliſhed, the ſtudent leſs advanced in ſtudy or in practice, and

and thoſe not following medicine as a profeſſion, comprehending all who cultivate the canine breed, for field amuſement, or domeſtic uſe. My theories he is at liberty to treat as he may think them to deſerve; they are often, confeſſedly, imperfect, and ſometimes hazarded merely to excite reflection in others; but to the facts adduced he will perhaps pay more deference.

Analogy I have called to my aid whenever it preſented itſelf under any rational view, conceiving the more analogies that can be brought to ſupport an argument, the more probability there will be in its favour; but I have inferred nothing certain, nor drawn from thence poſitive concluſions. If I have canvaſſed with freedom the opinions of reſpectable authors, it was with the intention to inveſtigate, not to offend, nor captiouſly to contradict. The candid reader, I truſt, will not accuſe me of, but excuſe errors or omiſſions, ariſing from inadvertency, or my particular ſituation, but not from negligence, or careleſs haſte.

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REFLEC-

REFLECTIONS ON THE METHOD OF CURE, AS HITHERTO PROSECUTED; WITH HINTS RESPECTING SOME NEW REMEDIES.

IN viewing an hydrophobic patient ſuffering under an exacerbation, the attention is naturally directed to the convulſions which torture him, the difficulty of deglutition, and the diſtreſs which he expreſſes at the ſight, or even mention of a fluid, though his thirſt at the ſame time be exceſſive. Theſe, with his melancholy aſpect, extreme reſtleſſneſs, conſtant watchfulneſs, with other marks of debility and irritation lead the practitioner without heſitation to conſider the complaint as ſeated principally in the nervous ſyſtem. He flies

therefore to whatever he preſumes may allay this inordinate action, or tend, even though remotely, to that effect. Hence emetics, cathartics, V. S. bliſters, clyſters, opiates, tonics, and every medicine of which he has either read or heard extolled for this purpoſe, are immediately called to his aid. With what ſucceſs may be ſeen from the melancholy detail of caſes, as fatal as they are numerous, which the experience of many centuries have recorded.

The time indeed for action is ſhort; its longeſt period little more than a day or two; the diſeaſe moſt rapidly running its courſe, the ſymptoms hourly doubling their violence. The late period of the malady at which the phyſician is called is another ſource of ſerious misfortune. Had he been preſent at the commencement, the rapidity of the diſorder would afford him too little time; what then can be expected from a few hours perhaps towards the cloſe of the ſecond or laſt ſtage? Placed in this dilemma, what can he do more than merely to caſt, with the bye-ſtanders, a look of commiſeration on the hopeleſs ſufferer, prepare the friends for the approaching cataſtrophe, or order ſome medicine, which, from the preſent

ſent ſituation of things, though powerful in itſelf, he is conſcious cannot for a moment arreſt the fatal blow?

The diſeaſe divides itſelf into two ſtages; the firſt from the commencement to the ſymptom Hydrophobia; the ſecond from this to death. During the latter no cure has ever been made: in the former it is not perhaps abſolutely proved whether a cure *can*, or has been accompliſhed. Dr. Gutherie's patient[a] however comes ſo near a poſitive inſtance that I am inclined to admit it, at leaſt as a prevention. This being apparently the commencement of the diſeaſe, it leads to hopes of a cure in the firſt ſtage, I truſt, not ill founded. This is a diſcovery of the higheſt importance, and ought to ſerve in future to gain an earlier admiſſion to medical advice.

Some have ſuppoſed the rabid virus not only to be weaker in one animal than in another, but weaker likewiſe at an earlier period of the animal's complaint than at a later. The different kinds, which have been obſerved in dogs, of *dumb*, as it has been called, and of *furious* madneſs, would ſeem on

[a] Vide vol. 1. p. 136. Boy at Peterſburgh.

on the one hand to countenance this idea; while on the other, the animal's capability of communicating the infection at an early period before his health is diſcovered to be impaired, and while he is placid and playful as uſual, would forbid us to repoſe on ſuch an opinion. It is not neceſſary here to decide farther on this queſtion. No prudent man will truſt himſelf with a ſuſpected animal, whether he be *dumb*, and apparently harmleſs, or otherwiſe. We go on then to a review of the principal means which are at preſent adopted for the removal of Hydrophobia.

1ſt. *EMETICS.*

THESE have been uſed as one of the firſt means of relief from an idea of bile in the ſtomach. Porracious matter has often been ejected. Some diſſections have ſhown the gall bladder turgid with bile, but in others again it has been found empty; from which contradictory ſtates the concluſion becomes uncertain.

As the body comes gradually into a ſtate of diſeaſe, and the different functions are leſs perfectly performed by the previous derangement, the biliary organs muſt ſuffer with the reſt. There may be an increaſed ſecretion from an increaſed irritation, and with this the quality of the bile itſelf be vitiated: there may be likewiſe ſpaſmodic affections exiſting in the inteſtine near the entrance of the duct into the duodenum; theſe may unite in throwing the ſecreted fluid into the ſtomach, and then become a farther excitement to this organ,

gan, whereby the vomiting, which happens in ſome caſes, is continued.[b]

Have we not reaſon to apprehend, that emetics in Hydrophobia cannot be productive of good effects? and have we not equal reaſon to conclude, where nervous ſenſibility and irritability prevail, which from the previous hiſtory of the malady we find exiſting to a degree unexampled in any other complaint, that ſuch an additional irritation muſt greatly add to the evil? They cannot remove the poiſon from the habit, nor ſtop the progreſs of the ravages which diſſections prove the ſtomach to have ſuffered. I am led from this to reject the practice as nugatory, if not hurtful.

In peruſing diſſections we obſerve indeed, in ſome of them, a thick coat of mucus adhering to the internal ſurface of the ſtomach and œſophagus, lining them almoſt completely.[c] It would appear that the troubleſome phlegm conſtantly in the mouth owes its origin to this cauſe; but an emetic, if this be a preſumed indication for its uſe, had it the power of removing

[b] Vide vol. 1, p. 214, for proof that vomiting forms a ſymptom of the diſeaſe. Many exceptions however exiſt.

[c] Vide Dundas's patient, Appendix.

moving the whole, would fail in its effect, becauſe the increaſed irritation and conſequent ſecretion would ſupply the diſcharge as faſt as it was removed.

If they be given with a view of increaſing abſorption, a defect in this function does not appear proved; the ſmall preternatural increaſe of fluid within the ventricles of the brain, and a trifling increaſe of halitus, once or twice found within the pericardium, are not ſufficient to eſtabliſh this indication.

If they be given to remove obſtructions by the concuſſions that they occaſion, or to promote a more regular diſtribution of circulating fluids through the different organs, they are ill calculated for the purpoſe. The very efforts intended to produce this effect may, with more probability, rupture tender parts than remove congeſtions within them.

Gangrened ſpots are preſent, as we have ſeen from diſſections, not only on the liver and diaphragm, but on the lungs, eſpecially in the *ſpontaneous* ſpecies; and in the *rabid* the ſtomach is covered with gangrened eryſipelatous abraſions, ariſing from debilitating cauſes. In the brain marks of congeſtion in ſome inſtances have likewiſe been ſeen.

It

It muſt therefore be evident, that whatever would increaſe theſe effects will be detrimental: emetics muſt create this, and therefore, in my opinion, are inadmiſſible.

2nd. CATHARTICS.

TOWARDS the firſt acceſſion of the diſeaſe, when nothing can be ſaid to be preſent but a kind of indiſpoſition, and general uneaſineſs over the ſyſtem; when a ſlight creeping coldneſs hangs about the patient, and a night leſs refreſhed by ſleep has been paſſed, ſuch as ſpecifically marks no diſeaſe, yet forms the beginning of every one, a gentle cathartic may be uſeful to remove any feculencies preſent in the inteſtinal canal. So far a cathartic may be admiſſible.

I ſhall not here point out the particular ſubſtances to be uſed. If we chooſe at all we ſhould not looſe ſight of the diſtinction of *active* and *lenient*. At a time when little nouriſhment can be digeſted; when the gaſtric juice is changed in its qualities, and rendered leſs fit for its primary purpoſes, draſtic purges ſhould be excluded.

The mucus follicles indeed are conſtantly diſcharging themſelves upon the internal ſurface

face of the inteſtine, and ſordes may be there collected; but I cannot think it either prudent or advantageous to apply too often irritating ſubſtances to evacuate this matter in any diſeaſe, much leſs in the preſent. Nature has wiſely placed here this apparatus; the mucus produced defends theſe delicate parts. Without it the contact of ſubſtances paſſing through would abrade and vellicate the tender nervous fibrillæ ſo numerouſly arranged in them.

A pill of well-levigated *calomel*, which I do not conſider as a rough medicine, or an infuſion of *ſenna*, may not be inferior to any other; or ſhould the choice fall on caſtor oil, I ſee little to object.

Practitioners conſtantly recommend purgatives in this diſeaſe; and it may be greatly doubted, whether they have not carried them too far. A weak patient cannot bear the repetition of purges producing "ſix or more ſtools at a time;"[d] the debility thereby induced is too ſudden, and too ſeverely ſhocks the ſyſtem. They tell us indeed the ſtools were extremely fœtid. This I readily believe; but I ap-

[d] Vide Hogg's caſe, and others, Appendix.

I apprehend the ſame would be found were they ever ſo often to repeat the cathartic.

The fœtor is an effect not the cauſe. We have found the ſtomach in a diſeaſed condition; nor have the inteſtines been always free;[e] let us therefore be careful not to aggravate them. It appears preferable for cleanſing theſe paſſages to uſe injections.

[e] Vide Diſſections.

3rd. *INJECTIONS.*

THESE are indeed of more importance in this diſeaſe than the laſt mentioned remedy. By them we can cleanſe the primæ viæ from ſordes, or adminiſter remedies. Nay, by them we may nouriſh the body; for this is the only ſafe medium through which nutriment can now be introduced; but ſhould the ſenſibility of the inteſtines be rendered greater, we ſhall be almoſt ſhut out from the only means of attempting relief. For while this paſſage is left we can prevent, for a time, at leaſt inanition, ſo far as to obviate fatal diſſolution by hunger. We can alſo, ſhould it ſeem proper, introduce opiates, aromatics, tonics, or ſuch other ſubſtances as may be preſumed ſuitable to our purpoſe. By injections theſe may be retained and partly at leaſt abſorbed: exhibited by the ſtomach they are ejected, and an additional injury is produced.

We have found, in the hiſtory of the diſeaſe the morbid ſenſibility of touch increaſed

to

to an extreme degree over the whole frame, particularly in ſome inſtances about the anus. This renders it difficult to introduce an injection pipe; for as ſoon as the anus is touched the ſphincter contracts, and the whole body is thrown into convulſions. This takes place more eſpecially towards the cloſe of life. To obviate it I am acquainted with no means. This ſenſibility forms an eſſential and characteriſtic part of the diſeaſe, and to mitigate it no endeavours have hitherto been ſucceſsful. This morbid ſenſibility, as far as reſpects the anus, is not however conſtant in every caſe. Both ſolids and liquids, food and medicine, are occaſionally retained in the ſtomach, but ſeldom found to deſcend into the inteſtinal tube. Though this renders cathartics leſs neceſſary, yet it militates nothing againſt injections, whether for cleanſing more effectually the rectum, or for adminiſtering medicinal ſubſtances through this channel.

4th. BATH, COLD and WARM.

COLD.

IN treating of the prophylactics the cold bath, one of theſe, was then mentioned as being uſed likewiſe for a means of cure. Celſus ſpeaks of it in this light, and principally with a view to difficult deglutition, a ſymptom which, in his opinion, it was well adapted to overcome; but he built his hopes chiefly on the mode of application. He orders the patient to be ſuddenly plunged into, and held under water for ſome time, that his horror to the fluid might be overcome, the ſtricture opened, and thirſt quenched.

In later times the ſame idea was revived, and we ſee it practiſed on an old man by Van Helmont; and later ſtill in our own country; for only a few years ago Dr. Vaughan, baffled by every other means in a deſperate caſe, turned his attention to the ſame practice as his laſt refuge.

A tub

Here a tub of cold water was procured, ſaturated with ſalt; into this the patient was plunged, and forcibly held under water for ſome time; he was then brought up, again re-plunged till he ceaſed ſtruggling, and left them apprehenſive of his being drowned. They wrapt him in a warm blanket and laid him in bed. He remained quiet for two hours; but the convulſions returned and ſoon proved fatal. We do not blame the doctor for attempting this remedy. It was a loſt caſe, and he only practiſed what had been ſtrenuouſly inculcated by high medical authority in ancient times. Under theſe circumſtances however the cold bath offers a very feeble and doubtful aid, not even balancing the ſufferings felt by the patient at the idea of plunging into a fluid, the very name or ſight of which creates horror, and throws him into the ſevereſt convulſions.

It has been found indeed highly uſeful in tetanic and epileptic diſeaſes, to the former of which this complaint is contended to be nearly allied. The cold bath, and even ſudden and complete immerſion during the height of the epileptic paroxyſm, has been uſed with the advantage of immediately ſtopping the fit;

and

and in one caſe, wherein I imitated this practice in a child, I found it produce relaxation of the ſpaſms, but it did not cure.

Dr. Currie, however, was more ſucceſsful, who recommends it from the advantage which followed in epileptic complaints under his management.[f] We ſee from the above trials in Hydrophobia its failure. Howſoever apparently ſimilar tetanus and Hydrophobia may be in the derangement ſuffered in the nervous ſyſtem, the event of this mode of cure in the two diſeaſes widely differs. It is therefore a corroborant of a very ſuſpicious kind in the rabid diſeaſe, and a means hitherto found totally ineffectual.

WARM.

The warm bath has been frequently applied in the preſent diſeaſe, and for the moſt part at firſt with apparent advantage. This has encouraged a repetition; but the utility experienced has in every inſtance been only temporary, and has diſappointed the expectations its trials had raiſed.

Dr.

[f] Vide Mem. Lond. Med. Society.

Dr. Vaughan, in compliance with the practice in uſe, and not without hopes from its celebrity as an antiſpaſmodic, put it fully to the teſt in two of the three caſes it was his lot to attend. In the third eſpecially he carried it to a high extent. Here it was thrice put into execution. The patient bore it the firſt time 45 minutes; and after the firſt ſenſations were over, ſaid he felt eaſier. A ſecond time it was applied, and he continued in it for no leſs than two hours, feeling likewiſe eaſier. This encouraged a third trial, but he could not bear it longer now than a quarter of an hour. The bath this time was compoſed of milk and water. The addition of milk was meant to ſupply nutriment through the medium of the abſorbents. All would not do; the bath debilitated and exhauſted ſtill farther.

It is true indeed, that no remedy, howſoever powerful, has been found adequate to arreſt the progreſs of the complaint. The warm bath has failed therefore like other remedies. Its favourers will reply----true, becauſe its application was too long deferred;---but from a careful conſideration of the ſymptoms, we cannot entertain ſanguine hopes

from an immerſion in warm water at any period. In diſeaſes proceeding from debility, it proves hurtful by inducing an additional relaxation to an habit requiring tone. Taught by ſo many unſucceſsful attempts, it is a remedy in Hydrophobia which I would not recommend, notwithſtanding the momentary relief experienced by its uſe. This ſmall reſpite will not compenſate for the increaſed debility which it occaſions.

5th. SUDORIFICS---STIMULANTS.

IT will be evident from a review of the ſymptoms, that little is to be expected from the firſt of theſe claſſes of medicines. They are, it is true, antiſpaſmodic; but they are at the ſame time powerfully debilitating. In obſtructed perſpiration, to open the cutaneous pores experience has proved them to be highly uſeful; but to open them here for the expulſion of the poiſon would be nugatory, while all the bad effects of relaxation, a neceſſary attendant, would follow.

Some of the patients whoſe caſes are related,[g] were thrown into copious perſpiration; but the reſult was unfavourable, and far from giving encouragement for its repetition. If no permanent relief was experienced from the uſe of the bath, ſtill leſs aroſe from ſweating. On theſe therefore we are not to waſte time, but apply means more adapted to the end, the removal

[g] Vide Appendix.

removal of the ſpaſms, and ſupport of the patient's exhauſted ſtrength.

Alkalies as Sudorific.

This claſs of medicines, which might be denominated ſudorific, has been lately recommended, but not perhaps with the ſame view. Dr. Bardſley ſpeaks favourably of the cauſtic volatile alkali, and prefers it in the form of pill. In any form it will be difficult for an hydrophobic to ſwallow it; and unleſs a few drops were involved in crumbs of bread, I know of no other pilular form in which it could be adminiſtered; for I believe that it cannot be reduced to a chryſtalized ſalt.

This medicine is indeed a powerful, penetrating, and diffuſible ſtimulus. On the preſumption of want of ſenſibility in the ſtomach, which ſome ſuppoſe, this is well calculated to remove torpidity, and increaſe action. How far theſe effects alone will promote a cure is ſomewhat problematical. This ſubſtance has been exhibited ſucceſsfully, as authors relate, for the bite of the viper, and other venomous ſerpents; and, by analogy, the ſame ſucceſs, they think, will be experienced

rienced from it in Hydrophobia; but the few trials made do not warrant the concluſion.[h]

Roux exhibited volatile alkali to Frances Ethevenoit in doſes of twelve drops night and morning, without advantage.[i] The memoir indeed does not authoriſe us to call it cauſtic. Whether this however would create any other difference as to its anti-hydrophobic effects, than merely in point of ſtrength, I ſhall not determine.

Wolf adminiſtered to two of his patients "ſpirit of ſal ammoniac prepared with quicklime,"[k] in doſes of from 40 to 60 drops daily, without effect: but as it was given for prevention, not for cure, it may not be conſidered a caſe in point; yet it will ſerve to ſhow, that phyſicians had turned their attention to this remedy at leaſt twenty years ago; it is there-

[h] M. de Juſſieu, in the year 1747, had mentioned eau de luce for the bite of the viper. Dr. Coſte, in his edition of Mead's works, mentions it alſo; and lately we have had recommended what is upon the ſame principle, viz. ammonia pura. Later ſtill Mr. Williams has not only recommended, but related ſeveral caſes of cure by it.

[i] Vide Mem. de la Soc. Roy. de Medicine, ann. 1783.

[k] Vide Encyclop. edit. Edinb. Art. Hydrophobia.

therefore ſcarcely intitled to the appellation of new.

Cauſtic volatile alkali has been found to diſſolve ſaliva when mixed with the mucus of the mouth.[1] The tenacity, as well as quantity, of this ſecretion forms one of the greateſt miſeries under which the patient ſeems to labour. It adheres with ſome force to the fauces: hence the great efforts that he is conſtantly compelled to make in order to eject it. This is obſervable by the diſtance to which occaſionally the ſaliva is thrown, when he is fortunate enough to accompliſh his purpoſe. It will ſtrike the foot of the bed, or it will daſh againſt the diſtant bye-ſtanders.

If this fluid could be changed in its quality, or prevented from thickening, ſome advantage at leaſt might accrue. If the diſcharge proceeds principally, as I am diſpoſed to believe, not only from the œſophagus, but even from the ſtomach itſelf, by the diſeaſed action under which theſe parts labour, a change in the mode of action would conſequently affect it. If the medicine under conſideration ſhould poſſeſs power to diſolve mucus, which from expe-

[1] Vide vol. 1, p. 284.

experiments ſeems to have been proved, it will anſwer both for ſeparating it from theſe ſurfaces where it adheres, and for giving a new action to the membrane morbidly ſecreting it.

In this light cauſtic volatile alkali may be admiſſible. Whatever the event may prove, it merits a fuller trial than has yet been attempted. Should it even be contended that the ſalival glands are not only greatly, but primarily affected, and the chief ſeat of this inordinate diſcharge, the ſame reſult may follow, the ſtoppage of a diſeaſed, by the production of a healthier action in them; and thus in either view the medicine may apply.

The ſucceſs of new remedies will always be doubtful, till time, and frequent exhibition, have confirmed their virtues. On finding no advantage from thoſe repeatedly tried, it becomes not only lawful, but meritorious to deviate from the beaten path, and even at ſome riſque to exhibit the remedium anceps.[m]

Fixed alkaline ſalts have been propoſed as the readieſt means of checking the vitiated diſcharge

[n] Melius quam nullum, anceps remedium. Cels. Aphor.

charge from the ſtomach. This organ, under Hydrophobia, ſeems to contain a morbid poiſon. It appears generated in the ulcers and abraded ſurfaces of their epidermis; and the diſcharge proceeding from them is renewed as faſt as removed. The *volatile* alkaline ſalts, as has juſt been ſeen, have been ſuggeſted, but the fixed have been thought preferable, from their property of diſſolving animal mucus; but no proof is afforded wherein they were ſucceſsful: and the fixed alkaline ſalts have never been found uſeful in checking the progreſs of morbid ulcers. They are ſufficiently well calculated to waſh the poiſon from a freſh wound; but here their virtues would ſeem to ſtop. The deſtruction of the poiſon, and the proceſs of healthy granulation and incarnation muſt be promoted on different grounds.

Would the exhibition of the nitric acid be effectual? This acid in the form of unguent is efficaciouſly applied to ſome ſpecies of ulcers generating a morbid poiſon; ulcers on the cilia of the eye-lids, and ſome others. I know from experience, that while it ſtrongly ſtimulates, it forcibly aſtringes, contracting the ſurface of the ulcer, leſſening the diſcharge of lymph, and producing a new action, whereby the

the vitiated ſurface ſloughs off, and a ſpeedy cicatriſation is promoted. Whether it could be ſafely adminiſtered ſufficiently concentrated to give hopes of theſe effects may be a doubt. This hint ſurely, in ſo deſperate a diſeaſe, cannot be deemed cenſurable, where the moſt powerful remedies have been given in vain.

Theſe two practices, I readily own, involve a difficulty; they ſeem even contradictory. If the cauſtic volatile alkali be recommended from its ſoluble virtues over an admixture of mucus and ſaliva, and if the nitric acid thickens them, both cannot be uſeful. The queſtion in this caſe is, which of the two indications ſhould be firſt purſued. By the former remedy we aim at diſſolving the adheſive mucus in order to its more ready ejection; in the latter we attempt to conſtringe abraded ſurfaces and ruptured cuticular veſſels, to prevent a copious diſcharge of lymph, and obtain cicatriſation. To reconcile them I would ſay, that the cauſtic volatile alkali appears more adapted where no abraſions exiſt, and where a diſeaſed action ſecretes too great a quantity of fluid, whether in the mucous membrane of the ſtomach and œſophagus, or in the glands ſeparating ſaliva; while the nitric acid would

ſeem

ſeem equally adapted for agglutinating ruptured veſſels, and for promoting the healing proceſs.

The diſeaſe I have divided into two ſtages, of which the firſt appearance of Hydrophobia forms the middle point or boundary between. Perhaps one of theſe remedies might be found better adapted to the firſt of theſe ſtages, the other to the ſecond ſtage; but in ſuch ſpeculations, where ſo little certain data are afforded, I dare not proceed. Hypotheſis is a dangerous guide; the path to which it points ſhould always be trod with caution.

6th. *VENESECTION.*

FROM the earlieſt accounts of this diſeaſe to the lateſt caſe on record in this country,[o] this has been a favourite remedy, and ſcarcely omitted in a ſingle inſtance; nor were practitioners ſatisfied without copious and reiterated trials. If the other means were highly debilitating, this was ſtill more; neither will it be any apology to urge its antiſpaſmodic powers. Where active inflammation exiſts this argument will hold good; but in the preſent inſtance we have none, or, if any, it is of a ſpecies totally excluding the uſe of the lancet.

Boerhaave, with all his ſagacity, fell into this miſtake, denominating the diſeaſe highly inflammatory. His authority was long powerful in the medical world, and the pathologiſts of the preſent day are ſcarcely emancipated. It is not my intention however to reflect on, but to ſpeak with becoming defe-

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[o] Vide Appendix. Smith's caſe, 1796.

rence of this great man, whoſe labours have conduced ſo much to the advantage of medical ſcience. I would be underſtood merely to point out the influence of a great name.

Fothergill, and others of the preſent day, uſed it freely, and although it appeared to me formerly a very doubtful remedy, I heſitated, on firſt turning my attention to the diſorder, to contradict a practice ſo univerſal. Strengthened however by the opinion of Ruſh, Meaſe, and a few more ingenious pathologiſts, I no longer maintain this doctrine.[p] "I ſhould conceive V. S." ſays Dr. Ferriar, "to be an ambiguous remedy in this complaint." He does not indeed abſolutely condemn it, but he adds, "with us it was prohibited by the ſtate of the pulſe, the advanced period of the diſeaſe, and the free uſe made of it a few days before by the patient." He was twice bled.

It

p Dr. Meaſe, in his Eſſay on this ſubject, quotes a paſſage from my Remarks, edit. 1, 1785, wherein I ſtood undetermined reſpecting V. S. while I caſt a look towards the great characters who uſed it, and ſeemed afraid to throw my feeble voice into the oppoſite ſcale. He is of opinion, and I now perfectly agree with him, that my heſitation on that ſubject needed not to be great; no ſymptom in any wiſe authoriſing the practice. Vide Meaſe on Bite of Mad Dog. p. 108. London.

It may be ſaid, that an examination of the caſes in this diſorder will prove the preſence of ſometimes a hard, full, and ſtrong pulſe; but this is not ſufficient authority at all times for V. S. Irritation, and it is here of the moſt forcible kind, will give a ſtrong degree of temporary vibration to an artery. A change almoſt momentary, from ſoft to hard, feeble to ſtrong, ſufficiently proves the affection of the pulſe by irritation. It will likewiſe, for a time, be affected by great and ſudden pain. A cautious phyſician will never uſe the lancet from the mere circumſtance alone of a pulſe hard and full to the touch at his firſt examination, without deliberately weighing all the phenomena.

In ſome of the diſſections ſlight marks of turgeſcence were ſeen on the brain; and in ſeveral, by Morgagni, the lungs were reported to be loaded with blood. Theſe caſes appeared to be of the ſpontaneous ſpecies. This laſt, in the rabid, is a doubtful occurrence.[q] The

[q] I am aware that Lieutaud has pointed out from diſſections, both inflammation and ſuppurations of the ſtomach; but later diſſections have detected nothing of this kind. Some doubts may remain reſpecting to what ſpecies

The former is ſo ſlight, that an indication for V. S. cannot be founded on it; and in the latter, ſuppoſing the lungs loaded, the general train of ſymptoms, evidently indicating debility, will not authoriſe the uſe of the lancet. The pulmonary turgeſcence appears to proceed from the debility of the heart unable to exerciſe its uſual functions, or propel the blood with its wonted energy. A mere ſtagnation of this fluid is not a proof of active inflammation; and copious V. S. would be practiſed with as bad ſucceſs as in baſtard peripneumonia, where it is generally followed by dropſy and death.

Another proof that the lungs are not in a ſtate of inflammation ariſes from the patient's ability to uſe violent exerciſe, ſuch as running, and

cies theſe may have belonged, or whether, ſtrictly ſpeaking, they were at all hydrophobic. An eryſipelatous inflammation exiſts, but not of the kind to produce pus.

Dr. Ferriar's patient had no marks of inflammation either on the pharynx, larynx, trachea, or pulmonary ſyſtem, except a ſlight adheſion on the poſterior part of the left lobe. In the courſe of the three months intervening between the bite and the diſeaſe, he ſuffered under an inflammatory catarrh, which yielded to the common remedies. Might not this adheſion proceed from thence, or from ſome previous inflammatory affection? But a turgeſcence merely in the pulmonary ſyſtem is not a mark of inflammation, it is a mark only of retenſion.

and even from thence obtaining relief. On the contrary, there have been indiſputable marks of debility diſcoverable on diſſection, both by the fluidity of the blood in the heart, and the quick putrefaction of the body after death.[r]

In a few hours after John Brown's[s] deceaſe, "a conſiderable degree of blackneſs was obſerved about his private parts, his throat, and ſhoulders, where he was bitten, which had no ulceration upon it; and likewiſe about the eyes, which were quite ſunk in their orbits."

Sometimes a ſmall mark of gangrene is obſervable on the diaphragm, not ſpreading over its ſurface, but confined to a ſingle ſpot; but no inflammatory character can be eſtabliſhed from ſo circumſcribed an appearance. Similar ſpots have been diſcovered on the ſurface of the lungs, and in ſome other parts, from the bite of the viper. The heart has been found irregularly dilated from convulſions, and the pericardium, in ſome caſes, cloſely adhered to it, without the intervention of the ſmalleſt drop of fluid; a clear evidence of the ſpaſms with which

[r] Vide Diſſections, vol. I.

[s] Vide Med. Obſ. and Inq. vol. 3, p. 367.

which this organ has been affected; and affording, in my opinion, though not a proof of inflammation, a full explanation of the pain at the pit of the ſtomach, and ſenſation of ſuffocation, of which moſt patients ſo grievouſly complain.

May not the relief experienced from running be referred to the increaſed motion of the blood renewing the circulation, now irregular and languid?[t] and may not the ſame explanation be given for the relief experienced in the open air by an hydrophobic boy?[u] On the whole, in condemning Veneſection I conceive myſelf nearer the truth than when, by the authority of great names, I was held in ſuſpenſe on the ſubject.

[t] Vide anecdote in Tranſ. of a Society, &c.

[u] Dr. Vaughan's third patient.

7th. *BLISTERS---RUBIFACIENTS---EMBROCATIONS.*

BLISTERS are indicated, with few or no exceptions, in every ſpaſmodic complaint. They ſeldom produce debility, and they often remove irregularity in the diſtribution of the fluids; but they act perhaps too ſlowly in the inſtance of Hydrophobia. We cannot obtain their ſtimulant and rubifacient effects ſooner than from three to ſix or ſeven hours; nor their complete veſicatory effects ſooner than from twelve to ſixteen or twenty-four hours; and in this time the diſeaſe may have arrived at its utmoſt extremity.

Dr. Gray's patient was much relieved by a bliſter to the throat: he was able to ſwallow about *three* hours after its application.[y]

Dr. Ferriar ſays he would apply them to the throat if he had again a caſe of the diſeaſe

 under

[y] Vide Med. Comment. D. ii, vol. 2, p. 308.

under his care; nor ſhould he in the leaſt heſitate, he adds, in applying them between the ſhoulders. He advances this opinion on the grounds of a *peculiar inflammation* exiſting in the ſtomach and œſophagus, which he ſuppoſes to be preſent in every caſe produced by rabid contagion. In the diſſection made by him, the water in the ventricles of the brain, compared with the healthy ſtate, was a little augmented. While this proves an increaſed action of the veſſels, whether ſanguiferous or exhalent, it would ſeem to point out the utility of veſication, both with a view to leſſen this, and to quicken at the ſame time the abſorbent power of the lymphatics. This indeed is only attacking a ſymptom, but it is a ſymptom in an important organ, the morbid condition of which muſt haſten the fatal event. I ſhould be inclined to apply them to the hinder part of the head, or about the top of the ſpine.

Rubifacients.

As a ſenſe of ſuffocation, with anxiety at the pit of the ſtomach, is a characteriſtic mark of the diſeaſe, ſtimulant embrocations, if not

actual

actual veſication, may be uſed to the part. Rubifacients, compoſed of the warmer gums, may be better adapted to the patient's convenience than bliſters, while the good effects will not be greatly diminiſhed. The violent agitations experienced render it difficult to keep the denuded ſurface covered with proper dreſſings; and expoſure to air, under this condition, is detrimental.

Whether we conſider the oppreſſion of the ſcrobiculus cordis as ariſing from the internal leſion of the ſtomach, or from the inordinate commotions and ſpaſmodic contractions of the heart, a derivation of the fluids from the internal to the external ſurface, with the new action created by this new ſtimulus, may have good effects in leſſening this diſtreſſing ſymptom. For the ſame reaſons ſimilar applications would ſeem indicated to the region of the heart itſelf; but as large quantities of fluid muſt be drawn off by ſo many bliſters, and tend to debilitate by the depletion of veſſels, it would be preferable to uſe plaiſters of the warm gums, or embrocations of ſtimulating oils.

Another diſtreſſing ſymptom which may be denominated characteriſtic, having ſo few exceptions,

ceptions, is the *uncommonly* great ſenſibility to cold air. This is a ſtrong proof of the diminiſhed energy of the vis vitæ. This is a ſymptom indeed, but in a leſs degree, introductory to all febrile affections. As in our caſe it is peculiarly diſtreſſing, and as the ſpinal marrow gives origin to a great part of the nerves of the trunk of the body, it would ſeem to follow, that ſtimulating applications in the courſe of the ſpine muſt be attended by ſome beneficial conſequences.

Rubifacients, or ſtrong embrocations, may, with great propriety, be applied here. The latter have been applied and recommended by the beſt modern authorities. Would not plaiſters of the warm gums, quickened with a ſmall portion of cantharides, be a more ſuitable form? The intention being the ſame, the choice reſts only in the form. Theſe can be retained on the part, by their adheſive nature, at pleaſure; and the accumulated diſcharge through the pores of the ſkin being prevented from diſſipating, heightens the ſtimulus, which from a thinner embrocation ſuffering it to evaporate, would be loſt. Beſides, as embrocations are more liquid, and the application of friction for a certain time neceſſary, the pre-

ternatural

ternatural ſenſibility of touch in the patient, with his horror to any thing fluid, will render them incommodious, and leſſen their good effects.

Difficult deglutition, another eſſential ſymptom in this diſorder, has pointed out to practitioners the propriety of theſe remedies to the throat. Whatever is found to renew a fit ought ſtudiouſly to be avoided. Every ſhock of this nature, while it adds to the debility of the habit proportionally renders nugatory all future efforts to procure relief.

Diſſections do not afford ſufficient information reſpecting either pharynx or larynx, to which difficult deglutition can be attributed. The ſlender marks diſcovered in one or two caſes, between the cartilages of the latter, is inadequate to the explanation of the ſymptom. We muſt look for it then to the œſophagus and its connecting parts; but whether it ariſes from leſion, or diſtant ſympathy and aſſociation,[w] or from both, as would appear to be the caſe, is not now the queſtion. To render it leſs permanent, or remove it, if poſſible, is to be our taſk: it is of the utmoſt importance

[w] Vide Zoonomia, vol. 2, p. 158.

tance in the treatment of the patient. For this reaſon I condemn the reiterated attempts of buſy individuals to *force down* drink. It is wanton and cruel. The patient would, were it poſſible, take plentifully of liquids; for his thirſt for the moſt part is intenſe: but every attempt redoubles his miſery, and he has become furious againſt officious attendants, and even the phyſician, when theſe ſolicitations were continued.

We find not only the ſight, but the word *drink*, to excite preternatural commotions; and even the pouring of a fluid from veſſel to veſſel to produce the greateſt horror.[x] How much is our commiſeration awakened on reading the practice of Celſus, Van Helmont, and others, who were led by a miſtaken pathology, in half drowning their miſerable patients!

Nature, in this diſeaſe, ſeems abhorrent to fluids, and Nature ought to be obeyed. The averſion indiſputably ariſes from ſome unconquerable cauſe; ſome exiſting impediment, whether palſy of the muſcles concerned, or diſeaſed

[x] "He cried out aloud on the perſon who was employed in pouring the water, calling him villain, and exclaiming againſt the cruelty of ſuch treatment."

Vide Med. Tranſ. vol. 2, p. 58.

diſeaſed ſenſibility. A frequent repetition of efforts under this condition can only gratify idle curioſity.

The deglutition of medicines may be urged with ſome propriety. Unleſs for ſuch purpoſes, let him be ſpared the convulſive throws accompanying the exertions. In every caſe however deglutition is not equally impeded: even where it is moſt free, it is better to take advantage of it only for the application of remedies; for food ſeems almoſt inadmiſſible from the impaired function of digeſtion. In this ſtate food is not nutriment, and may prove an aggravation of the diſeaſe.

8th. MERCURY.

WHEN we were conſidering prophylactics notice was taken of mercury. Much had been written in its favour, and with ability. All the arguments ſo ſpecioufly advanced, and the ſuppoſed proofs of its utility, by negative inſtances, when properly balanced with poſitive failures, fell to the ground. It will appear from a ſimilar examination unprejudiced and open, that the ſame concluſion muſt follow from its exhibition during the continuance of the diſorder. For the laſt fifteen or twenty years, from the reſpectability of the names that ſupported its adminiſtration, practitioners have embraced every opportunity of putting it to the teſt. From this body of experience we muſt reject it, not only as uſeleſs, but even under ſuſpicions of its becoming injurious.

If we reaſon trom a ſuppoſed analogy between the ſalivation by the remedy, and the increaſed flow of this diſcharge by the diſeaſe, and

and from thence draw our concluſion reſpecting its virtues, we cannot take advantage of it it from the rapidity with which death approaches. A very few days cloſe the ſcene; but a few days of its exhibition are not ſufficient to kill a poiſon, which, according to my idea, is univerſally diffuſed over the ſyſtem.

Obſerve the time that is requiſite for its adminiſtration, before it is capable of deſtroying the venereal virus. Not days, but weeks; in many caſes months, and in ſome a year,[y] and upwards, muſt paſs before this be completed. Yet were we to reaſon on it we ſhould find more probability of its ſucceſs now, than if exhibited as a prophylactic. In the one there is a diſeaſe to oppoſe by a remedy, which we hope to find in mercury, and cannot *poſitively* cónclude to the contrary till taught by experience: in the other it is adminiſtered as an antidote againſt that which has no exiſtence.

Mercury however when it acts on the habit, produces ſtrong irritation. The diſeaſe it has to oppoſe is one of high irritation, and the greateſt perhaps under which the human body

[y] This is to be underſtood of ſyphilis.

body can labour. Dr. Ferriar, whoſe opinion with me has much weight, ſays, "I own I have ſome doubts reſpecting the propriety of uſing a remedy, which produces ſo great a degree of irritability in the ſtate of high irritation attending Hydrophobia." This opinion was delivered not in a haſty manner, but after comparing the ſymptoms of the diſeaſe with the appearances on diſſection. An eryſipelatous ſtate of the ſtomach, approaching to gangrene, and ſpeedy ſolution of parts ſo eſſential to life as the ſtomach, is an unfavourable condition for the reception of a ſubſtance well known to produce and haſten ſuch a ſolution.

I ſhall not take up the reader's time by quoting a number of examples to corroborate theſe concluſions. In the hiſtories of caſes annexed to this treatiſe ſeveral will be found; and it will there appear, that even ſalivation, quickly raiſed and kept up to the laſt, afforded neither reſpite nor protraction. This is evinced in Dr. Gray's patient, the ſlave boy; and by Dr. Raymond's. In the latter mercury was exhibited, and a ſalivation kept up from the time of the bite till the diſeaſe terminated in death, a ſpace of ſomewhat more than forty days.

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In others it will be ſeen, that mercurial pills were taken, and mercurial unction, with no ſparing hand rubbed in on the cicatrices, on the throat, the arms, the legs, the thighs, and almoſt on every part of the body; yet to no better purpoſe, than if powdered chalk, or other inſignificant ſubſtances had been uſed in the ſame manner: "but do you condemn mercury thus without a qualification."[z] I anſwer, the reſult of our experience is as I have repreſented. But ſhould it ſtill be inſiſted on, that theſe experiments have not been ſufficiently numerous, nor ſufficiently varied, to produce its total condemnation, I ſhall not give my negative againſt their multiplication to thoſe who may ſtill place confidence in its virtues: but were the ſuperintendance of a patient to fall to my lot, I ſhould not waſte the precious moments remaining for action on a remedy that has proved ſo fallacious in the practice of other men of acuteneſs and diſcernment.

[z] Dr. Haulſton, Med. Comment.

9th. Running or violent Exercise----Application of Cold, natural or artificial----Ligatures---- Extirpation on the first Pain felt in the Cicatrix.

AMONG the cases of this disorder, collected by the Society for the Improvement of Medical Knowledge, two instances were adduced, where considerable relief was afforded by running, by which it was alledged, from observing this temporary respite, that future experience might discover something favourable from the prosecution of this hint. A short time before death a patient ran round Smithfield, and was somewhat relieved from the suffocation which before oppressed him. This is the *fact*; and the conclusion from it would seem to be, that whatever excites the arterial system to more frequent contractions, by more equally distributing the blood, removes obstructions which were either the consequence of their weakened energy, or conduced to excite them.

Medi-

Medicines founded on this theory ſhould conſiſt therefore of cordials, and diffuſible ſtimuli: for if we admit the weakened vis vitæ to be rouſed by the new force now applied in the act of running, theſe ſtimuli, though the body be at reſt, muſt equally excite it. Long and forcible exerciſe however of the muſcles is always followed by a proportionable debility. A ſtimulus of this kind is therefore unſafe. It exhauſts the ſmall portion of irritability remaining. It cannot be continued.

When perſons were ſtung by the tarantula, experience proved, that the cure depended on violent agitation. Dancing, as the reader knows, was the practice. No ſooner did the ſpider infuſe his poiſon, than muſic was provided, and the ſufferer ſet to dance till he often dropt down through exceſs of fatigue. He was then put to bed, and after ſufficient reſt, and copious perſpiration, found himſelf cured. The real cauſe of the cure was to theſe people unknown: they attributed it to the muſic; for the muſician was to diſplay his ſkill in the art, and run through all the modulations his genius ſupplied, till ſome happy ſtrain caught the patient's fancy. It is well known, that by the perſpiration which this violent ſtimulus pro-

produced, the cure was performed; and it is alſo as well known, that the ſame poiſon, provided it be allowed to have exiſtence, can be expelled by means much more ſimple and ſafe, conſiſting of cordials and diaphoretics.

Reaſoning in this way, dare we apply them in the caſe under review? Is there a ſufficiently ſtrong analogy between the effects of the ſting of the Italian ſpider, cured by dancing, or by diaphoretic cordials, and the agitation by running, producing, in ſome, temporary relief under the influence of Hydrophobia? and dare we on this ground purſue a ſimilar mode? To this I know not what to anſwer. The curſory review which has been already taken of ſudorifics, was not favourable to their general and unlimited exhibition. Yet from carefully watching the juventia and lædentia ſomething may be collected.

It is well known that exerciſe promotes a diſpoſition in the body to abſorb oxygene; and oxygene, it is equally well known, gives out heat, oxydating the blood, and ſtimulating the heart: heat is in a diminiſhed quantity in every inſtance of this complaint. This proceſs appears to me not one of

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the leaſt uſes of exerciſe.[a] Motion expands the cheſt, and giving action to every muſcle, by promoting a quicker circulation, creates a larger decompoſition of atmoſpherical air entering the pulmonary ſyſtem; but to render the good effects reſulting from exerciſe permanent, it muſt be gentle and long continued. Exhauſtion, the conſequence of violent exerciſe, cannot be conſidered as tending to the removal of a diſeaſe of debility: running, therefore, in this point of view, becomes a dubious mode of acquiring relief in Hydrophobia. A ſubſtitute capable of communicating this principle in a more gentle and natural way muſt be applied.

Another idea which has been ſuggeſted, is the application of cold to the cicatrices at the time ſhooting pains in theſe parts are firſt felt, giving intimation of the approaching diſeaſe. To benumb the part by ſuch application, and render it incapable of continuing irritation, might afford means, it is thought, of arreſting the miſchief, and give at leaſt a better opportunity of fortifying the ſyſtem againſt its attacks. Whether the diſorder was about to be propa-

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[a] Vide Garnet's Lectures on Preſervation of Health.

gated by abſorption, or by irritation producing a ſympathetic action over the nervous ſyſtem, excluſive of the other, is no objection to this practice, as in effect the reſult will be the ſame.

A ſtoppage in the oſcillations about to produce the malady in the one caſe, or the detenſion of the virus from mixing with the maſs of fluids in the other, according to this reaſoning, would equally follow; but here we have no experience to guide us; ſuch an attempt has not yet been made; and there appear no reaſonable objections againſt it. It is an external application from which no miſchief can be apprehended, unleſs it be carried ſo far, by artificial productions of cold, as to produce mortification.

On the ſame principle, but with analogy in other diſeaſes to ſupport it, is the application of ligatures above the wounded part, between it and the heart, in the courſe of the lymphatics, leading to the point where the abſorbent fluids mix with the blood. This has been practiſed in the bites of ſerpents, and it is affirmed with good effect. It is aſked, why may not this be uſeful alſo, both at the time of receiving the bite, and at the time of the firſt ſenſation

ſation of pain in the cicatrix, the firſt harbingers of the diſeaſe? I anſwer, moſt certainly: unleſs it was to interfere with other means better adapted for the purpoſe, let it be taken for a help, ſlender as it may be, to prop us for a time. Inſtances have occurred and may again occur, where nothing more efficacious can be attempted, as an external means from antipathies, &c. of the patient.

But where it is poſſible let another mode be attempted, and on the ſame principle likewiſe, a mode by far more rational, and from which more ſafety may be expected; this is extirpation of the cicatrix; and let it be executed now in the ſame manner, and with the ſame precautions as were directed when treating of prevention, at the time or ſoon after the bite.[b]

Reaſons were advanced for the propriety of this practice, even when the diſeaſe is about to agitate the habit: for till this time I hold the diſeaſe to be local, and the chance of extirpating the cauſe with the cicatriſed parts great.

[b] Vide vol. 1, p. 130, et ſeq.

After extirpation at this moment, to give the operation all its efficacy, and the patient the fulleſt chance of eſcape, cauſtic volatile alkali[c] ſhould be dropt on the freſh cut ſurface, in order, by its penetrating and ſpeedily diſſolving power, that every diſeaſed particle may be deſtroyed, continuing the repetition till we be aſſured this has been accompliſhed. Whether the malady is about to be produced by nervous irritation, and conſequent ſympathy of the whole nervous ſyſtem, as contended for by ſome; or by irritation on the nervous muſcular parts of lymphatics, as contended for by others, and conſequently abſorption by exciting them to action, the effect will be the ſame; the good atchieved equally certain.[d]

The ſtate of the cicatrices in Dr. Gray's patient will warrant the practice.[e] A bliſter was applied over one of them, where the ſurface

[c] Ammonia pura.

[d] Every medical man, every pathologiſt knows the abſorbents, in common with other parts, to poſſeſs nervous energy; and that *irritation* therefore muſt be prior to action even in them: and the conſequence of this action will be abſorption of the matter, whatever it may be, in contact with their mouths, and fitted to their capacities.

[e] Vide vol. I, p. 77.

face was ſmooth, and even exhibiting nothing but the uſual marks on new cuticle. The bliſter however in removing it, laid open to view a deep and unſeemly ulcer, while it had no effect beyond common on the ſurrounding ſounder parts. It cannot be doubted from this fact, but extirpation at the time of the firſt ſenſations of local pain, would have afforded well-grounded hopes of ſucceſsful prevention. From this inſtance likewiſe, the favourers of abſorption may derive another argument to ſupport their cauſe.

10*th*. *OIL.*

THIS remedy was in uſe among the ancients. Celſus and others recommended it, but it has been long neglected; and we may fairly preſume this to have ariſen from the want of ſucceſs. A few years ago however the idea was revived.[f] Dr. Shadwell, of Brentwood, was called to Wyburn[g] (a lad) labouring under this diſeaſe. He ordered the patient's body ſeveral times to be anointed with oil; but fruitleſs attempts were made towards its internal exhibition. On the failure of this, clyſters of mutton broth and oil, as a ſuccedaneum, were injected; but the patient died without the leaſt reſpite from the remedy.

At this time a man in the neighbourhood received a bite from his own dog: this, and the death of the lad from a ſimilar accident, ren-

[f] Vide Mem. Lond. Med. Soc. vol. 2, paper by Dr. Simms.

[g] December, 1790.

rendered him extremely unhappy. His agitation was heightened by reflecting on the deluſion of a ſpecific which he knew Wyburn to have taken, and which was conſidered as infallible. On the tenth day from the accident he is found labouring under ſymptoms of difficult deglutition, violent ſpaſms, and a high degree of mania. The doctor was called, and he ordered oil to be plentifully adminiſtered in all the different modes mentioned, and after ſome days the man recovered, as if from a trance, "his mind preſenting to him nothing but a blank," from the time he was taken ill. He continued the oil for a week longer, and was cured. This, as might be ſuppoſed, made a conſiderable noiſe, and a happy victory was announced over an enemy hitherto unconquerable, except in the fancies of compounders of ſpecifics, and their followers.

A review of the ſymptoms in this caſe, and a careful compariſon with thoſe where rabid virus had produced the diſeaſe, will convince us, that the affection under which Cumbers (this was his name) laboured, had but a diſtant relation to rabid Hydrophobia, and can only be conſidered as the effects of fear. The attempt however to cure Hydrophobia by this

new

new method was laudable, though its failure in ſeveral ſucceeding trials has deſtroyed the high expectations then raiſed.

One of theſe trials was made on a patient under the care of Dr. Maclean;[h] but as this man and Cumbers were differently treated, it was alledged that this could not operate againſt the remedy.[i] No great difference however in reality aroſe in the mode of exhibition. Cumbers was anointed from head to foot, and *ſome* adminiſtered internally. At Sudbury the unction was only partially uſed in form of friction to the neck and cheſt every hour, till an oil bath could be procured. In this, when ready, he remained ten minutes, when that uneaſineſs, that horror, which hydrophobics conſtantly expreſs at the touch of every thing fluid, whether hot or cold, water or oil, irreſiſtably cauſed him to ſpring into bed from the hogſhead in which the oil was contained, with an agility aſtoniſhing to all employed about him. The oil bath is one of the means, which had been pointed out as proper, in the memoir

[h] Sudbury.

[i] Vide Mem. Lond. Med. Soc. vol. 3, p. 470.

moir from which Dr. Shadwell copied his practice.[k]

It was recommended likewiſe by Celſus and Aurelianus. The former indeed adviſed it differently; for according to his plan the cold bath was immediately to precede it. If the practice proved any thing, it was the inutility of the oil bath; for it ſpeedily made the patient uneaſy, without procuring any reſpite. The experiment perhaps would have been more complete had univerſal unction, in place of partial, been adopted; but I am firmly of opinion not with more ſucceſs; becauſe this was a caſe where rabid infection gave exiſtence to the diſorder; the other admitted of cure, becauſe it was excited by fear, and without rabid infection. Immerſion in oil, in the Sudbury

k In a letter which I had written to Dr. Maclean, in conſequence of his having informed me, that accidents had juſt before taken place from the ravages of a mad dog in his neighbourhood; and Tweed having fallen a victim to the diſeaſe, in the vicinity, in whoſe caſe oil exhibited by the mouth, and applied in friction, proved unſucceſsful, I had ſuggeſted, ſhould another accident take place, the uſe of an oil bath in preference to friction, as appearing more conſonant to the idea given in the Greek M S. publiſhed by Dr. Simms. Dr. Maclean, with a readineſs, creditable to his humanity to adopt whatever, even in appearance, might afford a chance for relief, put in practice this hint.

bury caſe, it might be argued, was even a more efficient way of obtaining its virtues than by unction; and the difference rather in favour of the latter. On this kind of reaſoning however it would be trifling to inſiſt.

A little before this an opportunity had preſented of exhibiting the ſame remedy at Long Melford, in that neighbourhood; and the perſon (Tweed) an unhappy victim of the ſame dog. An attempt was made, but at too advanced a period of the diſeaſe to give it pretenſions to an experiment. The patient was nearly in the agonies of death; and whether it was by his ſtruggles while they poured oil into his mouth, or by nature already exhauſted, I ſhall not decide, but his death inſtantly followed.

The next trial in this country, in ſpring, 1796, was a fairer experiment, in as far as quantity ſwallowed gave a claim to this title; but it came alſo too late; the patient ſurvived only a few hours. "Immediately on ſeeing him I gave him a large cup of olive oil.[1] He had much increaſe of convulſive action on his endeavours to ſwallow it; but after getting it

[1] Dr. Girdleſtone's letter to the author.

it to his mouth, he ſwallowed it very haſtily. The cooling and pleaſant ſenſations which the oil at firſt produced, gave him great hopes, and he was able to ſwallow three cups with much leſs difficulty. In about half an hour he had drank near twelve ounces; but from that time the oil ceaſed to alleviate any of the painful ſenſations which kept increaſing until ſix o'clock in the evening, when he died."

Dare we pronounce favourably of oil from this temporary alleviation? Dare we conclude, that had it been employed earlier in the complaint the reſult would have been better? Notwithſtanding my doubts on this ſubject, it would be raſh totally to condemn a plan not yet executed to the beſt advantage, i. e. of applying it in the incipient ſtage of the diſorder, and continuing it till death, or the patient's recovery: but the varying nature of the complaint requires a varied doſe, a varied practice, and nice diſcrimination.

In the inſtance juſt quoted, as in many others, we may regret the late attendance of the phyſician. The young man's accident was made known to Dr. Girdleſtone for ſome time before the acceſſion of the diſeaſe; and ſome converſation reſpecting the event had paſſed

between

between him and the parties concerned; yet he was not called (a culpable neglect) till late in the forenoon, and the patient died late in the evening. From a plan early commenced under the doctor's direction we might have gained information, even if the patient had not been relieved. He would have purſued with caution the method adopted, and no doubts would have remained reſpecting the effects of the medicine, or the inferences to be deduced.

With reſpect to the exhibition of oil, I would ſuggeſt ſome doubts on the propriety of copious and reiterated draughts.[m] It is not always the quantity of our medicine from which good effects ariſe; it is the nicety in balancing it to the ſtrength of the malady. The repetition of the doſe, when its quantity is diſcovered, is in a ratio to the diminution of the new action produced, the new ſenſations created. If the ſtomach, as ſome have alledged, be in a ſtate of morbid ſenſibility, the quantity of the doſe ſhould be in proportion; if the contrary, the reverſe. Copious doſes of oil

[m] In a prefatory paper to the memoir already quoted, oil is directed to be given *copiouſly*.

oil early in the diſeaſe, while the irritability of the ſtomach remains, may produce vomiting; or ſhould this not take place, on its entering the inteſtines a ſupercatharſis may be induced.

Let the reader review the annexed caſes, where early purgatives were exhibited, and he will find the ſtomach and bowels to require no larger purgatives than would move them in other diſeaſes, or even in health: let him again eſtimate the nature of theſe evacuations, and the debility which they occaſion. Whatever the ancients may have written on the copious deglutition of oil, prudence, and a better knowledge of the animal œconomy ſhould forbid our ſtrict imitation.

On the oil firſt touching the ſtomach,[n] "the cooling and pleaſant ſenſations it produced gave great hopes." It was this that led to its repetition; but the repetition, though ſeveral times made, could not prolong this fleeting advantage. The medicine ſeems to have done no more than would have followed from other fluids of a cooling kind, the abſorption perhaps of a ſmall portion of heat from a diſeaſed ſurface, where, from the ſenſation of a "boiling

[n] Dr. Girdleſtone's caſe.

ing heat," very often complained of in this region, it would ſeem preternaturally accumulated.

Thirſt is alſo intenſe, and deglutition ſo impeded as to prevent the free admiſſion of cooling fluids; ſo that when admitted, of whatever quality, they would blunt for a moment this painful irritation. Whether from ſuch reflections and obſervations I know not, but we find much, I think, about the ſame time that oil was introduced, vinegar ſtrongly recommended, and likewiſe on the baſis of experience, as a cure for this diſeaſe; and from ſome trials it appears, that a ſimilar temporary eaſe ſucceeded the exhibition.

11*th.* *VINEGAR.*

THIS had excited the attention of Engliſh phyſicians much about the time the uſe of oil was introduced; and an opportunity in this part of the country, in Nov. 1791, preſented for its adminiſtration. Tweed was at this time bitten at Long Melford, in this county.[o] Mr. Edwards,[p] uſed ſuch means as were admiſſible at the time of the accident. The wounds were in dangerous places, the cheek, chin, and throat; and from the largeneſs of the animal, the ſuddeneſs of attack, and the parts laid hold of, it was a matter of ſurpriſe how the man eſcaped from him with life.

On the firſt notice of the approaching diſeaſe Mr. Edwards came to his aſſiſtance. Dr. Maclean was likewiſe called. They agreed to try vinegar. The patient had felt ſome ſlight indiſpoſition the day before; had paſſed a reſtleſs

[o] Suffolk. [p] Surgeon in that town.

leſs night, but went to his uſual work this morning, continuing it till about ten in the forenoon, when his increaſing illneſs compelled him to deſiſt, and return home.

The interval between his leaving work and the commencement of impeded deglutition was very ſhort; for Mr. Edwards, who came immediately after the man had left work, found him labouring under it. "Vinegar to the quantity of half a pint was got down about noon, and very ſoon repeated a ſecond and third time." Here is another proof of the ſenſibility of the ſtomach, and the increaſed periſtaltic motion of the inteſtines; for "it produced a plentiful evacuation from the bowels, and conſiderable perſpiration."[q] They continued the vinegar throughout the day and ſucceeding night.

"Unremitting vigilance and attention was given to the vinegar plan, ſo that in the whole we got down four or five pints." Along with this was adminiſtered at different times T. Opii to the amount of 200 drops[r]----"with ſome little abatement of the ſpaſmodic agitations."

Here

[q] Vide caſe Appendix.

[r] A pill of Op. and Merc. Flav. was adminiſtered every four hours, ibid.

Here is a temporary reſpite; but whether we are to attribute it to the vinegar, to the opiate, or to their conjoined powers is difficult to determine.

On Saturday, the day on which he died, not finding him in a better ſituation from the medicines given, and willing to adopt any means that promiſed relief, they deſiſted from the farther uſe of vinegar, and in its ſtead had recourſe to oil; but the poor man expired immediately after the firſt draught. We find little encouragement, as far as we can reſt on this experiment, to purſue the uſe of vinegar in Hydrophobia. Dr. Maclean however merits our thanks for the experiment.

The remedy was likewiſe exhibited in France ſeveral years prior to this; for we find the Sieur Gravan,[s] while under this complaint, by the direction of his phyſician, uſing vinegar, but without any influence in the malady.

In the caſe of Johnſton, Dr. Ferriar preſcribed a mixture, and I apprehend with the ſame view, a conſiderable part of which was vinegar. To a decoction of twelve ounces of bark he added eight ounces of diſtilled vinegar,

[s] Vide Mem. de la Soc. Roy. de Medicine, ann. 1783.

gar, directing that from an ounce and a half to two ounces ſhould be adminiſtered as often as poſſible. This was in the afternoon, and at nine the ſame evening he found deglutition not to be ſo much impeded as to prevent its exhibition. The patient however was rather worſe than on the laſt viſit; but the diſtance of four hours was too ſhort to expect much alteration from the plan. It was continued therefore through the night; and by the ſucceeding viſit, at nine next morning, above a pint of the mixture had been taken, and deglutition ſtill leſs impeded than before; for beſides ſome food given during the night, with little difficulty, he ſwallowed, in the doctor's preſence, "ſeveral draughts of the mixture, without any ſtriking appearance of diſguſt."

Although the patient was progreſſive towards his end, as appeared from the increaſe of ſymptoms, eſpecially from the delirium, he ordered the mixture to be continued; but it was without ſucceſs.

Small doſes, without any admixture, and repeated at ſhort intervals, would perhaps be a fair way of ultimately inſtructing us of its real powers in this diſeaſe. It produced purging in Tweed's caſe, with copious perſpiration, evacu-

evacuations which, in this debilitating diſorder, cannot be ſafely permitted to any extent. If opium is to be conjoined, it ſhould be with a deſign merely to reſtrain the former. If experiment be the end in view, practitioners ſhould exhibit this remedy in as ſimple and uncompounded a manner as circumſtances may permit; and continue it, unleſs they find it evidently hurtful.

As the principle of acidity forms a large part of this compound, other virtues may be inherent beyond thoſe of a ſimple ſtimulus. How does vinegar operate in ſimple burns, in injuries from ſcaldings, &c. where it is ſaid to have been uſeful?[t] Do theſe ariſe from the oxygene it contains? Applying it in Hydrophobia to a diſeaſed ſtomach, a ſuppoſition here

 ſtill

[t] Mr. Kentiſh treats the ſubject of burns in a different manner from what has been done by ſome preceding authors, or from what may be granted by ſome modern pathologiſts. He endeavours to eſtabliſh certain laws, of which the following is one, viz. "That whenever the action of a part has been conſiderably diminiſhed by withholding an accuſtomed ſtimulus, the re-application of the ſtimulus ſo withheld (or any other with a view to make up for the deficiency) muſt be very cautiouſly adminiſtered, until the part is gradually reſtored to its former healthy action." Vide Eſſay on Burns, p. 110. The reader may conſult the paſſage at large.

ſtill to be maintained, will analogy ſupport our expectations of a ſimilar mode of action? Theſe are queſtions I muſt leave to the conſideration of my intelligent reader.

Should the principle of acidity be conſidered as the uſeful part, and alone containing the virtues of the medicine, the coheſion of combination between it and the ſubſtance in union with it is to be taken into conſideration. The more looſe the combination, the more eaſy will the ſeparation become, to afford it an opportunity of a new combination with the diſeaſed ſurface.

Important inveſtigations might be inſtituted here alſo, reſpecting what ſhare light poſſeſſes in the compoſition of animal bodies. Light is always found to accompany heat, and oxygene again is in ſtrict union with this. In a quieſcent and uſeleſs combination we cannot ſuppoſe it. If it be allowed a place in the animal fibre, its redundancy or defect will create a change in the part. We cannot perhaps make the addition, preſuming its deficiency, more effectually than through the medium of the oxygenous principle. This is a crude conjecture; I dare not purſue it. Yet ſtill I maintain light not to be uſeleſs as a component

part

part of bodies in either, or in all of the three kingdoms wherein it may be found to reſide.

The radicals of vinegar are, according to the beſt analyſis yet afforded, carbon, hydrogen, and azote.[u] The laſt is in much ſmaller proportion than the two former; but they are all oxydifiable, and retain the principle of acidity with ſome degree of force. I am led to infer, that as carbon and hydrogen form the greateſt bulk of theſe radicals, the coheſion of the oxygene with them is greater, and at the ſame time the quantity neceſſary for their ſaturation leſs, than if azote had abounded in the compoſition. I conclude ſo from the great rapidity with which azote is known to attract oxygene in the formation of the nitric acid.

If an acid compoſition be thought uſeful, I ſhould be inclined to prefer the oxalic[v] to the acetous. Sugar is compoſed of carbon and hydrogen, in conjunction with a ſmall portion of oxygene; but to theſe radicals we can unite a larger portion of oxygene in the ſeparation of its acid. By the addition of nitrous acid to ſugar we can ſeparate its acid in form of

[u] Vide Garnet's Outlines of Chemiſtry.

[v] Acid of ſugar.

of pure cryſtals: we are enabled by this proceſs to oxydate and ſuper-ſaturate it, and in this way obtain a larger quantity in a given bulk, and in a looſer combination; a conſideration of conſequence in reſpect to deglutition in Hydrophobia.

The farinaceous vegetables, as containing nearly the ſame principles, might be treated in the ſame way with a ſimilar reſult; but I have pointed at ſugar both as being ſpeedily procurable, and eaſily manageable in the proceſs of obtaining the oxalic acid.

This is a ſpeculation however which the reader may treat as he thinks it to deſerve. On the whole, if the *oxalic* acid be not thought uſeful, I am little inclined to place confidence in the removal of Hydrophobia in the *acetous*, or in other words in vinegar.

12th. *ANTISPASMODICS.*

FROM obſerving the convulſions with which the patient is agitated in this complaint, the practitioner would be naturally led to the application of antiſpaſmodics. The articles in this claſs of medicines are numerous, and afford him an extenſive choice. They have been exhibited in many different methods, by themſelves ſimply, or forming parts of other compounds; but with what reſult is too well known. The famed muſk compoſition has been long in uſe, and at this day the generality of practitioners preſcribe it, notwithſtanding their conſtant diſappointment.

Camphor, as another of theſe, united with merc. emet. flav. and adminiſtered with a view not only to promote an evacuation from the ſtomach, but a copious diaphoreſis, by laying the patient between blankets, has been ſome time ſince uſed, and a caſe of its ſuppoſed ſucceſs promulgated. That the patient recovered

vered I do not doubt----that the caſe was rabid Hydrophobia I greatly doubt. Dr. James would have advanced this as a certain proof of the efficacy of his mercurial preparation; and the favourer of the camphor plan would as ſtrenuouſly aſſert the efficacy of this ſubſtance. Aſafœtida has had ſimilar trials, with the ſame unfavourable event; and the ſame may be ſaid of moſt others of this claſs.

Opium, the moſt powerful of all the antiſpaſmodic tribe, in every different preparation yet invented has failed; and even doubts may be entertained, whether in ſome inſtances it has not been hurtful. It has been recommended and exhibited in moderate, and alſo in large and powerful doſes; but the abatement, when any followed, was not only temporary and fleeting, but with ſuſpicions of the ſhare it contributed even to this reſpite. It has failed in very large doſes. Vaughan gave to one of his patients no leſs than 57 grs. in fourteen hours. Mr. J. Hunter exhibited it in the French woman's caſe with a tolerable free hand; but Dr. Meaſe carries it ſtill farther adviſing it from five to fifteen grs. meaning it, doubtleſs, to be occaſionally repeated. Opium

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was found ſucceſsful in tetanus; and arguing from the analogy ſubſiſting between the two diſeaſes, he concludes for its utility in this, as well as in the other diſorder.

Opium has different effects, as is known to every practitioner, on different conſtitutions. The ſame quantity exhibited to one perſon will lull him to repoſe, while it will excite in another delirium, and render him frantic. Reflecting on this, it is an additional reaſon with me for diſſuading the practitioner from truſting to it in any other manner than as an auxiliary.

I am fully perſuaded of its becoming poiſonous to many, before it would allay their agitations, or produce reſt. This ſubſtance is now known moſt powerfully and ſpeedily to exhauſt the ſyſtem, cauſing a quick expenditure of the vital energy. The repoſe which follows it can only be the repoſe of debility; a ſlender ſolace in a diſeaſe where debility forms a prominent feature.

Finding no benefit to be received under any management of this drug hitherto attempted, it is, I think, to be abandoned, in order to make room for other means which

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analogy may point out as more likely to be effectual.[x]

To pneumatic medicine then let us turn our attention. Our experience indeed is but limited in this walk, yet from ſome trials of äerial fluids in diſeaſes of great nervous irritation, and the beneficial conſequences reſulting from thence, hopes may be entertained that our labour here may not be loſt. Among the different ſpecies of theſe fluids the hydro-carbonate is firſt to be conſidered, provided we place confidence in ſome late trials with this gas in the removal of ſpaſms.

Mr. Barr, as he informs Dr. Beddoes, has found it a powerful antiſpaſmodic; and in his opinion holds a pre-eminence far above opium. His experience enables him to ſpeak in the following terms: "It might be eaſy to produce facts to ſhow that hydro-carbonate air is the moſt direct, powerful, and eaſily managed antiſpaſmodic yet diſcovered; that it produces no

[x] Extract of hyoſciamus has been preferred to opium of late, for inducing ſleep, and poſſeſſing other antiſpaſmodic virtues. It is ſaid to poſſeſs a laxative quality, rendering it ſuperior to opium, which is always followed by coſtiveneſs. Whether this medicine would ſucceed better in this diſeaſe wants experience to determine.

no coſtiveneſs like opium, nor any effects whatever, but that for which it is exhibited; and that it will be found capable of relieving ſome of the moſt diſtreſſing calamities that are incident to humanity, ſuch as convulſions, locked jaw, and *Hydrophobia*."

If Hydrophobia from rabid virus be meant here, as is probable, and not difficult deglutition and averſion to fluids, ariſing from ſeveral other ſpaſmodic affections, it will be one of the moſt fortunate diſcoveries of the preſent age. We have not indeed experience of its trial in any caſe of rabid Hydrophobia to reſt on; but were we to argue on the above authority, from the analogy of its utility in various complaints of the ſpaſmodic claſs, wherein it has been beneficially applied, we ſhould find it our duty, when occaſion preſents, to give it a fair and unequivocal trial.[y]

That

[y] It is now well known to the public that this gas has been called in by the ingenious Dr. Beddoes, for the relief of another complaint hitherto as hopeleſs as Hydrophobia; I mean conſumption, and even hæmorrhagy from the lungs, under the idea of the habit being in too great a ſtate of irritation occaſioned by a diſpoſition towards the abſorption of a ſuperabundant quantity of oxygene; and caſes have been adduced of its happy effects in ſupport of this theory.

During

That this gas is powerful in its effects we have other practitioners to teſtify. Dr. Withering found it to weaken the ſtroke of the pulſe, and to produce vertigo, with occaſional nauſea, though diluted with eighteen or twenty times its bulk of atmoſpheric air. He affirms it alſo to have the power of inducing ſleep; and in ſome inſtances, particularly in aſthma, to eaſe difficult reſpiration and cough; but for reſtrain-

During the proſecution of this ſubject, its powers over ſeveral convulſive and ſpaſmodic diſeaſes were rendered manifeſt. It is obvious, that where formidable convulſions, as Dr. B. ſays, are already preſent, "no cauſe ſhould be applied which renders the muſcles more ready to be thrown into morbid action." A deterioration of atmoſpheric air, by a mixture of hydro-carbonate, has been found advantageous in epilepſy, and other convulſive diſeaſes in young and plethoric habits, eſpecially where the fits recurred in ſleep. By moderating this irritation the fits ceaſed: the pulſe was reduced in frequency, and natural repoſe took place.

Where ſleep has been broken, and a habit of nocturnal watchfulneſs induced, it has been propoſed, as a counteracting remedy, and under the ſanction of experience. A reduced atmoſphere, by a number of candles burning in a bed-chamber on the rejoicing night for Lord Howe's victory, procured a clergyman in this ſituation a night of repoſe unexampled for ſeveral years; and to his ſervant, in the ſame chamber, profound ſleep. Other caſes corroborated its hypnotic virtues, and might give birth to the propoſal of adminiſtering it in Hydrophobia, where high irritation and conſequent watchfulneſs harraſs the patient.

reſtraining active hæmoptoe he beſtows on it the higheſt praiſes.[z]

Should it be productive of no other advantage to the hydrophobic patient than ſome ſound ſleep, and this without danger, it would be a medicine deſerving attention, where we find opium has conſtantly failed, or when it ſucceeded, has generally left the ſyſtem, as abovementioned, more exhauſted, and the calamity ſtill farther increaſed. Taking therefore a view of the whole of our experience in regard to hydro-carbonate gas, I would be almoſt tempted to look forward to it with the moſt pleaſing hopes, as a ſtrong ſhield of protection againſt the ravages of this dreadful foe, were I not apprehenſive that it can add nothing to the real *energy* of the habit, but muſt rather ſubtract, or by its nature diſſipate a part of what yet remains; and which, I am led to think, exiſts already in too ſmall a proportion.

Dr. Thornton would ſeem to hint at the probability of the corroborating effects of this gas.[a] Reflecting on it as medicinal in phthiſis, and calling to mind ſome diſſections he had made, where

[z] Vide Annals of Medicine, vol. 1. p. 392.

[a] Vide Beddoes's Conſiderations.

where he had diſcovered marks of increaſed ſecretion in the lungs, without ulceration, aſks this queſtion: "Are not tonics indicated in diſeaſed ſecretions; and may not the hydrocarbonate give tone to the abſorbents?" Could its tonic power indeed be proved, we ought not to refuſe it a place in Hydrophobia, where ſo great a degree of morbid ſecretion exiſts in the œſophagus and ſtomach;[a] but this ſtill remains problematical. It leads me however to conſider how far tonics may be appropriated to the removal of this malady.

[a] Vide Diſſections, vol. I.

13*th*. *TO-*

13*th*. *TONICS.*

WE ſhall leave it to the reader to determine reſpecting the hydro-carbonate, and proceed to another claſs of remedies, at preſent as highly extolled as any yet reviewed, viz. tonics. Many of the moſt powerful however have been exhibited without the ſmalleſt advantage.

In Dr. Vaughan's third caſe, viz. that of a child, cuprum ammoniac was largely adminiſtered. The doſe was no leſs than two grains united to an equal quantity of extract opii, ten grs. aſafœtida, and three of flowers of zinc, which, formed into pills, were given every four hours. This medicine "afforded not the ſmalleſt relief; nor did they ſhow the leaſt action upon the frame;"[b] but this want of action may be attributed to the opium with which it is united. It has been ſeen, by examples already related, that the ſtomach is far from inſenſible

[b] Vide Dr. Vaughan.

ſenſible even in the laſt ſtage; but it muſt be at the ſame time acknowledged, though it cannot be received as a general law, that many caſes run through their ſtages, and retain larger quantities of ſubſtances, both mild and acrid, lenient and ſtimulant, without the leaſt apparent irritation from their action.

The indication however of cure which has been drawn from the high degree of irritability preſent in the frame is juſt, viz. that a ſtill more powerful impreſſion muſt be created to counteract that of the virus; but in producing this new impreſſion lies much of the difficulty; for if it is attempted by ſtimuli which ſtill farther exhauſt the ſyſtem, without a new ſupply of vital energy, death muſt enſue, even by the very means we are purſuing to obviate it.

In moſt of the diſſections a thick mucus is obſerved to line the ſtomach and œſophagus. This is abundant proof an increaſed ſecretion. Tonics are found to promote abſorption, and reſtrain many of the diſeaſed ſecretions. This may be one reaſon for their adoption in the preſent inſtance, and on this ground they are admiſſible. Bark, and the different preparations of iron being more ſanctioned from experience, are mentioned by authors as probable helps.

helps. Dr. Ferriar looks forward to bark, and the cold bath, the latter of which has already been under conſideration.[c]

It does not appear that much advantage can be derived from medicines immediately applied to the ſtomach itſelf, from the perverted condition of the gaſtric liquor, which will oppoſe their ſolution and their entrance into the habit. But if it be argued, that the impreſſion is to be made on the nerves in the coats of the ſtomach, and by this means change that ſecretion, independent of its mixture with the fluids, my objection is removed, and the local application of medicines admitted.

Subſtances hitherto taken by the mouth having all failed, create in me ſuſpicions of ſurmountable obſtacles oppoſing this mode of relief. But the moſt powerful may not yet have been exhibited, or at leaſt the beſt mode of doſing them not diſcovered. Among the claſs of tonics one of the moſt powerful has been lately propoſed from the mineral kingdom, and it is added experience has already ſanctioned its uſe; I mean, arſenic.

Dr.

[c] Vide p. 14, on Cold Bathing as a Cure.

Dr. Ruſſel, in his account of ſerpents, confirms the efficacy attributed by the natives in the Eaſt Indies to a compoſition now known by the name of *tonic* pills; the chief ingredient of which conſiſts of this metallic ſubſtance. He aſſures us that it never failed in the cure of the bites of venemous ſerpents;[d] and, led by ſome kind of affinity, the natives uſe it alſo, with equal ſucceſs, in Hydrophobia, not only in dogs, but in man.

Theſe tonic, or Tanjore pills conſiſt of ſix ingredients; three of them we ſhall call *known*, and three *unknown*. The former are white arſenic, pepper, and quickſilver; the latter vegetable ſubſtances, called by the natives velli-navi, neri-viſham, and nervalam. The two firſt of theſe *laſt* three would ſeem to be of the cauli-form, or herbaceous kind, as the powdered roots are directed for uſe: the other would appear to be of the ſhrub, or nut-tree kind, as the kernel in powder is the part recommended. Equal parts of theſe ſix articles (the arſenic firſt being levigated) are beat into a maſs, with the juice of wild cotton, and formed into pills, ten or eleven of which, when weighed, were found to be a dram, which brings them ſomewhat under five

[d] Vide Ruſſel's Deſcription of Serpents.

five grains each. The quickſilver is alſo to be rubbed with the juice of wild cotton till the globules diſappear.

Swartz, a Moravian prieſt, inſtigated by the celebrity theſe had obtained for the bite of the cobre de capello, and other Indian ſerpents, through the nobleſt motives of philanthropy, purchaſed the ſecret from the Brachmins, and communicated it to the Company's ſurgeons. One of theſe communicated it again to Dr. Ruſſel, with ſeveral experiments, proving their ſucceſs. The ſurgeon, having made farther trials ſeparately on the three unknown ingredients, found, that almoſt without exception, chickens were killed by five grains of the velli-navi root, in the ſpace of from an hour to an hour and twenty minutes.

The progreſs of the ſymptoms were, gentle purging, convulſions of the neck, throat, and breaſt; the former being forcibly drawn down to the latter; univerſal tremors over the body, paralyſis and loſs of motion of the legs, and death.

In the doſe of half a dram to a dog, it vomited violently, but in about ſix hours he recovered. The other two ingredients had leſs activity; they proved gently cathartic. The

ſurgeon uſed in his experiments pills made in the ſame proportion with the Brachmins, and they anſwered in every reſpect equally with theirs. As in general the number of pills which completed a cure did not exceed ſix, and ſometimes fewer, the quantity of mild quickſilver is too trifling to have any ſhare in it. The ſame may be ſaid of three others; arſenic, therefore, and the velli-navi only form the powerful parts of the preſcription.

We are farther aſſured, that the ſurgeon to whom we are indebted for the communication of theſe pills, had put them to the teſt in Hydrophobia. He exhibited them to no fewer than fourteen different perſons bitten by mad dogs, without any other ſymptom than purging in moſt, and a ſlight vomiting in a few of them. This proves at leaſt the ſafety of theſe pills, though it cannot be poſitively aſſerted that they cured the diſeaſe, unleſs the complaint was evident when they were exhibited. If they be meant however as preventive, they deſerve no credit; there was no proof of diſeaſe.

Dr. Girdleſtone, from the character arſenic had received, adviſed a ſolution of it to be adminiſtered in the caſe to which he was called

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in ſpring, 1796; but the patient was too far exhauſted before the doctor ſaw him, and too little of the medicine taken in the ſhort time that preceded the lad's death, to afford any idea of its virtues.

The velli-navi has conſiderable reſemblance to white hellebore in powder. It is uſed in India in a cutaneous diſeaſe reſembling the itch, and denominated there the Malabar itch. In exhibiting this medicine to dogs under Hydrophobia, a quarter of a grain at leaſt of the arſenic may be given at a doſe; and ſhould this be retained it might poſſibly be augmented to half a grain at the interval of ſix or eight hours. Opportunities, we have reaſon to fear, will be but too frequent for putting it to the teſt. A dog, when tied up, can be as eaſily managed under this diſeaſe, nay more ſo in as far as reſpects the exhibition of medicines, as the human ſubject; for he ſeldom refuſes what is ſet before him under the inviting form of food or drink, in which medicines may be conveniently involved, till the laſt day or two of his life, when the force of the diſeaſe has rendered him frantic, and deprived him of all power of recollection.

From

From ſome experiments on arſenic, in which we are informed Girtanner has been ſucceſsfully employed, this ſubſtance, hitherto conſidered as a ſimple body, has been diſcovered to conſiſt of three principles, carbon, azote, and hydrogene ;[e] and whether any combination of theſe principles in the form of elaſtic fluids, can be adopted with ſucceſs, future experiments only can ſhow. Were we abſolutely certain of the virtues of arſenic in this diſeaſe, applied to the ſtomach in the common way, analogy might lead us to ſuppoſe, that ſome ſuch combination in the elaſtic form applied to the lungs, by more immediately reaching the blood, and affecting the ſyſtem, would be a ſpeedier mode of relief.

In a diſeaſe ſo ſhort in its fatal termination, this would be of much moment. We have ſeen that the ſtomach and the heart, with perhaps the diaphragm, as connected with the pericardium, are the chief parts of the habit under the ſevereſt action ; for the brain, though ſome turgeſcence of veſſels and ſlight extravaſation,

[e] Vide Annals of Medicine, vol. I, p. 411, where we are told, that the proofs from whence this concluſion is drawn will ſoon appear in Gren's Journal of Natural Philoſophy.

ſation point out alſo an increaſed action, can be conſidered only in a ſecondary view. If theſe gaſes can reach the blood, and alter, we may ſuppoſe, its compoſition by adding to its loſt vitality, or if the phraſe can be admitted, neutraliſing as it were the irritating particles, and by this abſtraction mitigating the ſpaſms of the heart and its appendages, a victory will be gained.

When conſidering hydro-carbonate gas, and building our conjectures on the reports of caſes highly ſpaſmodic, which it removed, it was under the idea, that little difficulty or danger would occur in the application. Later experience has not however confirmed the ſuppoſition. It has been ſince ſhown, both by Mr. Watt and Dr. Beddoes,[f] that its effects on the human body are far from free of ſuſpicion; nay are highly deleterious. In ſomewhat more than one-third atmoſpheric, and ſomewhat leſs than two-thirds hybro-carbonate air, animal life (a pigeon) was ſpeedily deſtroyed. It had a particular action on the blood; for it rendered it ruddy, and kept it fluid, as it was ſome time before coagulation took place.

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[f] Vide Beddoes's Conſiderations, vol. 1, ed. 3, p. 38.

In examining the dead ſubjects the blood was obſerved, in ſeveral inſtances, to be not only black and grumous, but even fluid. Can we infer from thence the exiſtence of a ſuper-abundant quantity of carbon? If this be admitted, the hydro-carbonate, a ſubſtance replete with carbon, cannot be a ſuitable remedy. Means ſhould rather be ſought for to render the carbon volatile; to ſeparate it from the blood, and to throw it out of the habit. Vital air ſeems to be the only principle for this end. With it carbonic acid gas will be compoſed, and emitted, and an union of it alſo with the ſuper-abundant hydrogene will form water to be depoſited in the natural receptacles, and carried out of the body, leaving the blood of a more healthy compoſition, and of a firmer coheſion of parts. A firmneſs of craſſamentum is an indication of ſtrength, and the red particles, in theſe inſtances, abound in quantity, and their oxydation is more complete.

The hydro-carbonate gas has a farther peculiarity, it renders the muſcles, marrow, and ſpongy part of the bones, and indeed the whole through-

§ Vide Diſſections, vol. 1.

throughout red, even "as red as a ſalmon in ſeaſon." It was thought that this gas rendered fleſh ſofter on being boiled. This was the concluſion drawn by perſons who ate of a boiled fowl, which had been immerſed before death in this air. According to them it approached to the conſiſtence of *boiled liver*. The quality it poſſeſſes of giving change of colour was an unexpected diſcovery; but after repeated experiments the fact was eſtabliſhed. An experiment made on human blood with carbonate acid gas, and a ſimilar one with hydro-carbonate, clearly proved that the former *did not* brighten the coagulum, while the latter rendered it ſo nearly equal in *redneſs* to blood *reddened* by oxygene, that a nice eye only could diſtinguiſh the difference of ſhade.

When a trial was made with hydrogene gas, it was found neither to brighten the coagulum, nor yet venous blood, to which it was applied. A remarkable phenomenon however preſented; an unuſual flaccidity of the heart. This formed an evident contraſt to experiments with pigeons, one of which was ſuper-oxygenated, and the other hydro-carbonated by being made to inhale theſe ſpecies of gaſes.

In

In theſe the heart was found *hard* and irritable.

With reſpect to the hydro-carbonate, its reddening power was confined to fluid blood; whereas both atmoſpheric and oxygene airs brightened the ſuperficies when applied to the coagulum. Experiments were made on venous blood at different diſtances from its being drawn. With hydro-carbonate in no inſtance did it brighten the coagulum. The concluſion drawn from theſe experiments is, to uſe Dr. Beddoes's words, "that hydro-carbonate air has little power to render blood florid, except it be fluid; but this I think," adds he, "depends on the coheſion it acquires, and not on the life it loſes." Another obſervation has been made on the hydro-carbonate gas, which is, that if blood be immerſed in it, there follows a ſeparation of a greater quantity of ſerum, than when either atmoſpheric, oxygene, hydrogene, or carbonic acid airs are uſed.[h]

But to return; whether the principles of arſenic, as conſiſting of the addition of azote to the hydro-carbonate, would cauſe any change, remains to be tried. It is certain that

[h] Mr. C. Gimbernat.

that an animal is much ſooner deſtroyed in carbonic gas than in either hydrogene or azote; and it is plain from this to which of the three the danger is principally to be attributed.

With reſpect to the hydro-carbonate, or heavy inflammable gas, it was found in the proportion of 100 cubic inches to 600 cubic inches of atmoſpheric air, and only two-thirds of this conſumed, to produce vertigo ſoon after, and a ſtate approaching to inſenſibility, the pulſe being at one time nearly imperceptible. A relaxation of the ſphincter of the bladder followed, with a ſenſe of extreme coldneſs. "After the patient had got into his carriage he fainted; and his pulſe, for ſeveral hours continued quicker and weaker than before."[i]

From the reſult of theſe trials, the former opinion entertained of it in Hydrophobia will loſe of its force, and the increaſed degree of cold, a ſenſation of which the hydrophobic patient generally complains, together with a quicker and weaker ſtate of the pulſe, which continues for ſeveral hours after the air has been

i This ſpecies of air is beſt when new. If kept ſome time after being prepared, a depoſition takes place.

Vide Beddoes's Conſiderations, vol. 1, ed. 3.

been uſed, will ſtrengthen the objection. It is difficult indeed to ſpeak with any degree of confidence on this ſubject, at preſent, from the confined number of trials before us. By a farther dilution of hydro-carbonate with atmoſpheric air, happier effects may ariſe. Mr. Watt is deciſive on this head. If it be taken only a little diluted, he finds "the greateſt part to be expired without having had any action; but by dilution time is given; and there is a continued action upon the blood, which though leſs violent in its immediate effects, laſts longer, and ſeems more friendly." Yet on the whole, in the diſeaſe we are inveſtigating, I fear it is inadmiſſible; and if elaſtic fluids be the object, we muſt look to a different gas for relief.

It would be a deſirable circumſtance to aſcertain the ſtate of the body under Hydrophobia with reſpect to oxygenation. If a larger portion of this principle ſhould enter the habit, hilarity follows, and a cheerfulneſs of temper: if a ſtill larger, a ſtate bordering on diſeaſe; and if a higher gradation be continued, ſymptoms of inflammation, greater or leſs, according to this proportion, will be the conſequence. Theſe facts Dr. Beddoes's experiments

ments have put beyond doubt.[k] In Hydrophobia blood drawn from a vein is always ſaid to have a healthy appearance; but a ſingle experiment to determine this more accurately, beyond a ſuperficial view of its external ſurface, I believe, is not recorded.

It appears indeed, that the buffy coat, as it is generally denominated, or a ſeparation of the fibrous part or coagulable lymph is never preſent; and that the ſurface of the blood is always florid: but contact with the atmoſphere will impart this colour to the ſuperficies, be the texture beneath what it may.

The ſerum of the blood contains azote.[l] "The ſerum appears to be a mucilage, conſiſting of water, acidifiable oily baſes, muriate and carbonate of ſoda, with calcareous phoſphate." The red part is poſſeſſed of the ſame characteriſtics as the ſerum, with the difference only of iron in a greater proportion.[m] The coagulable lymph, or fibrous part, when well waſhed, remains

[k] Vide Conſiderations.

[l] Vide Cavallo on Factitious Airs, p. 233.

[m] A complete analyſis of the blood is not intended here: the reader is referred to Fourcroy, Cavallo, and others, who have more particularly made the inveſtigation their ſubject.

remains white. Even the gentleſt heat hardens it in a ſingular manner. It is however very liable to putrefaction. Treated with the nitric acid, a conſiderable quantity of azote is diſcovered; likewiſe a quantity of pruſſic acid. Treating it with proper teſts the oxalic acid is at the ſame time diſcovered in it. This may tend to ſtrengthen a crude idea already entertained,[n] that oxalic acid may be deficient, as well as other parts of this variouſly compounded fluid.[o]

The carbone, hydrogene, and azote, conſtituting the ſubſtance of the fibrous part are ſeparated in different proportions (on analyſing it) to combine with oxygene in the nitric acid, for the formation of the pruſſic and carbonic acids in the form of gas, and by cryſtaliſation for forming the oxalic.

The fibrous matter is likewiſe ſoluble in the muriatic acid, and a green jelly is formed. By the help of heat it is diſſolved in the acid of vinegar.

Theſe

n Vide page 66.

o It may be objected, that the oxalic acid here is the product of theſe trials, and not previouſly exiſting in the blood.

Theſe are ſome of the reſults diſcoverable by chemical teſts applied to healthy blood out of the body. They ſerve to inform us of its principles; nor can it be doubted reſpecting the changes which this fluid undergoes while circulating in its proper veſſels, in a ſtate of the body under diſeaſe; but the preciſe condition not only of hydrophobic blood, but blood in other ſtates of bodily derangement, may not be eaſily diſcoverable, becauſe a ſtandard by which it may be meaſured cannot be eaſily fixed.

In a diſſection mentioned by Morgagni, the great putrefaction of the body is advanced as a reaſon for the ſlight examination made. Yet the weather for the ſeaſon was cold, and the diſtance from death only ſixteen hours.

Brechtfeld's examination likewiſe tends to the ſame point.[p] He found the right ventricle full of grumous blood, and the left with blood altogether fluid. In a third inſtance by Morgagni, the heart had a ſmall quantity of blood in it, like black pitch half diſſolved; and in the ſame patient the blood in the head is deſcribed as of a black colour. Alluſion is made

[p] Vide Morgagni.

made to three other caſes, where a lividneſs after death appeared on different parts of the body externally, the fingers, neck, back, and ſhoulders; while in another caſe, the blood on opening the body was fluid, and did not, when cold, congeal in the open air.

Blood, when combined with alkalies, without being previouſly decompoſed, becomes more fluid by ſtanding.[q] Dare we aſſert the ſuper-ſaturation of the blood with alkali in theſe inſtances? Can the fluidity diſcovered on opening theſe cadavera be aſcribed to this cauſe? Soda and ammonia are both detected in blood; the former, it has been affirmed, exiſts in an uncombined ſtate. A green tinge is communicated to ſyrup of violets by the ſerum of the blood, or, as it has lately been called, the albuminous fluid, a proof of its alkaleſcence.

If the ſerum be expoſed in an open veſſel to a hot temperature, a decompoſition takes place; it putrifies rapidly, and ammonia is ſeparated in form of ammoniacal carbonate, with an oil inſufferably nauſeous in ſmell.[r] Ammonia

q Vide Cavallo on Factitious airs, p. 229.

r Serum alſo contains ſoda in a naked ſtate, and in poſſeſſion of all its properties.

nia is the true ſolvent of the albuminous part of the blood; and if fluidity be produced by alkalies, it is to ammonia I would place it.

With reſpect to ſpeedy putrefaction after death, more inſtances, beſides the few lately given, are related by the induſtrious Morgagni; among which is the body of a hydrophobic woman after the ſhort period of fifteen hours, even in the middle of winter. The concluſion from the whole is, that hydrophobic bodies tend to a rapid putrefaction. This granted, does not the ſpeedy diſſolution ſeem to argue a defect of vital air in the habit as the effects of the diſeaſe?

Let us now examine whether in the living hydrophobic we can diſcover ſigns of this deficiency. In the hiſtory of Wyburn's caſe Dr. Shadwell notes, after mentioning the lowneſs of the pulſe, "the nails of the toes and fingers were perfectly bleached, and the ſkin cold to the touch." I apprehend this will appear to proceed from infra-oxygenation. The following fact goes far, I think, to place it beyond doubt. On inſpecting the tongue, "a lead-coloured ſtripe appeared running along the middle of it." Should this be the fact it muſt totally exclude the exhibition of hydro-carbo-

nate,

nate, and will call for a ſupply to counteract deficient oxygenation. We ſhall prove this principle, in a certain degree, to be powerful in removing irritability, and favourable to ſleep.[s] Whatever reſtores equilibrium to the fluids, and promotes their due diſtribution, the juſt proportion likewiſe of the different component parts being preſerved, we know, invigorates the habit, and eſtabliſhes health; and health eſtabliſhes ſound and refreſhing repoſe.

A ſlight conſideration of the circulating maſs will ſufficiently convince us of the diſproportion that muſt occaſionally take place between the quantities, as well as qualities of the particles.

View the blood of a perſon of a vigorous habit in the plenitude of health; let him be reduced by deficiency of food, by alvine and cuticular evacuations, by repeated V. S. or by all theſe together. The compoſition of the blood will now be found materially changed.[t] are

[s] Vide Mr. Atwood's caſe, and others, deſcribed in Beddoes's Conſiderations.

[t] Amongſt other changes, the red particles in particular will be deficient. A perſon weakened by evacuations, or

If each ſeries of veſſels, each order of glands meet with this fluid depauperated of ſome of its uſual particles, the new fluid, which theſe are deſtined to ſelect and form, muſt be deficient in ſome of its proportions. Thus neither the uſual ſtrength and energy will now be communicated to the muſcle, to the membrane, the cartilage, the bone, the marrow, nor to the nerves. All will be robbed, in ſome degree, of their accuſtomed ſhare of certain materials neceſſary for their proper functions. Whatever the principle withheld from the blood may be, all its dependencies, every part of the machine, according to its nature, will feel the deficiency.

Give, on the other hand, a due proportion to this fluid, and all the different fluids, all the various ſolids derived from it will be ſtrengthened in their various actions. Reſtore that which is loſt, and we reſtore the machine to its vigour. If by inſpecting any of the parts

or by previous ſickneſs, has always pale blood: the moſt ſuperficial eye can diſcover this. The red particles are as conſtantly found where vigour is preſent. It would appear from this, that theſe particles are with more difficulty compoſed by nature, than the other parts of this fluid. This concluſion follows from the previous obſervation, that in debilitated habits they are ſcanty.

we can diſcover what is deficient; if by certain ſymptoms we can be led to a proper concluſion our work is nearly done. The intimate connection of oxygene with the habit, and with life, the important purpoſes which it is deſtined to perform, render the deficiency inſtantaneouſly felt. Its reſtoration is eaſe, repoſe, vigour, health. This ſubſtance ſupplied to the habit I would denominate a true and *direct* narcotic, in contra-diſtinction to opiates and other analogous materials, the primary action of which being exhauſtion, I would, for the ſame reaſon, term *indirect* narcotics.

A middle aged man, in health, will conſume two gallons of pure oxygene air in about five minutes, as repeated experiments have proved. In this inſtance however it is done more rapidly, and the expenditure greater by one half than is neceſſary: for if theſe two gallons be mixed with two gallons of azotic gas, it will ſerve for reſpiration *ten* inſtead of five minutes. Here we ſee how eaſily the body may be rendered replete with oxygene; how eaſily we may ſupply a deficiency of oxygenation.[u]

A

[u] When oxygene is imbibed by the blood, it circulates to the extremities of the arteries, and is there depoſited; it then

A compariſon between hydrophobic blood, and ſome taken at the ſame time from a healthy perſon, placed in the ſame degrees of heat, would throw light on its nature. It would be ſeen which was moſt prone to putrefaction; which threw out moſt ſerum; which coagulated in the ſhorteſt time; which had the firmeſt craſſamentum; which the moſt fibrous matter; which the moſt alkaline parts, with the difference in con-

then combines with ſubſtances for which it has a greater attraction than it has for the blood; for it would appear from this to have only a looſe coheſion with the blood. In its combination at the extremities of the arteries it parts with its caloric, which becoming ſenſible, produces animal heat. All the heat is not given out in the lungs on the union of the oxygene with the blood, but both heat and light enter with it into the left ventricle, to be diſtributed by the arterial circulation to their extremities.

The blood conſtantly returns in the veins deprived of it, and receives a freſh ſupply in courſe, at the extremities of the pulmonary arteries, where it is attracted through the air cells by this fluid: for oxygene is even found to enter blood out of the body though a bladder be interpoſed, a ſubſtance of much greater conſiſtence and thickneſs than the membrane forming the air cell. The muſcles and moving fibres of the body in this manner receive oxygene, which, combining with them, communicates firmneſs and ſtrength.

Heat therefore is produced in every part of the body where action of parts takes place, and new combinations are made; and this will be in proportion to the degree of activity in the part. Can we trace, in this link, the cauſe of increaſed heat in local inflammations?

conſiſtence and colour; and if farther chemical teſts were thought neceſſary, the enquirer would not reſt ſatisfied here, but would proſecute the ſubject more intimately. From the reſult of ſuch examinations we might be better enabled to determine the propriety of modified atmoſpheres.

Some think the ſtomach,[v] not the organs of reſpiration, the propereſt channel by which medicines can be conveyed to the habit. Allowing this as a general rule, which we know here to be Nature's law, caſes will offer, and theſe many, where ſerious obſtacles will oppoſe themſelves. Dr. Beddoes and his correſpondents have given undeniable proofs, that the application of remedies through the reſpiratory organs, howſoever uncertain on ſome occaſions in their operation, may be rendered neither difficult in the execution, nor deleterious to the patient; and that the proſecution of pneumatic medicine, as it will bear varying in a thouſand modifications, may not only be highly efficacious, but even a more certain and ſpeedy way of affecting the blood, and general habit, than through the ſtomach.

The

[v] Vide Rollo's Minutes of a Diabetic Caſe.

The ſtate of this organ in Hydrophobia precludes, in a great meaſure, the immediate application of remedies to its coats. The difficulty of deglutition, and the dreadful paroxyſms not only occaſioned by the effort itſelf, but by the very ſight or mention of ſubſtances to be ſwallowed, are a ſtill more powerful obſtacle. The lungs are free, and no obſtacle preſents to inſpiration. In ſome of the caſes we find a rude attempt or two at modified atmoſpheres, by burning frankincenſe, and other gums in the chamber, which the patient inhaled without difficulty. There is indeed in every caſe a diſtreſſing ſenſe of ſuffocation, ſometimes threatening immediate death, occaſioned by the ſpaſms of the heart, as would appear, interrupting the paſſage of the blood, but it yields with the paroxyſm.

If all the phenomena of the diſeaſe be reviewed, and we can rely on the appearances of putrefaction after death which have been affirmed, the vital air modified to our purpoſe would ſeem better adapted to a cure than the other ſpecies of elaſtic fluids. Great exertions create proportionate debility by the expenditure of this principle. No diſeaſe, no condition of the body has been ſeen, where greater exertion,

or

or greater diſtreſs of the mind takes place. The exhauſtion muſt be in proportion. Great temporary exertions indeed of muſcular motion have been made in Hydrophobia, without apparent inconvenience, nay even with ſome momentary relief of a diſtreſſing ſymptom, but they were the laſt efforts of expiring ſtrength. This is arguing however from an effect, not from the cauſe of the diſeaſe. The poiſoned ſaliva may poſſeſs the power in itſelf, like opium, of exhauſting the frame, and creating a morbid deficiency of the vital principle, beyond what is known in other diſeaſes.

If it be oxygene that gives power to muſcular motion; if its abſence be weakneſs, we cannot doubt but a condition of the body is preſent in this diſeaſe, containing a far leſs portion of this principle than is requiſite for the ſtandard of health. If this ſpeculation be permitted, the mode of relief lies before us, and air ſupercharged with oxygene affords it. We have ſeen that this can be done with ſafety.

Dr. Prieſtley, the firſt human ſubject, I believe, who ever inſpired oxygene gas in a ſtate of ſeparation from the atmoſphere, after continuing

tinuing its inſpiration, inſtead of experiencing inconvenience, felt his breaſt lighter and eaſier from it. The experiment however has ſince been more completely confirmed.

Taylor, a healthy young man of 22 years of age, reſpired it, with ſenſations equally pleaſant, under the eye and management of Dr. Higgins.[w] His pulſe was increaſed from 64 to 90. It became at the ſame time fuller and ſtronger, without the ſmalleſt ſenſation of uneaſineſs, or inconvenience.

Lime-water was judiciouſly prepared to abſorb the carbonic acid emitted in expiration, as faſt as it was generated. Nineteen pints of gas was the quantity, and ſix minutes the time employed. On this being finiſhed, an equal quantity was added, and again conſumed in the ſame time. His pulſe was now increaſed to 120, and was vigorous. Notwithſtanding this increaſe even to a high febrile number, yet no inconvenience was ſuſtained; but he felt a ſenſe of unuſual warmth in his lungs. This nevertheleſs will ſuggeſt a caution, pointing out the neceſſity of watching the pulſe, and ſuſpending the exhibition of the gas for a limited

[w] Vide Minutes of a Society for Philoſophical Experiments and Converſations, p. 146.

limited time, leaſt inflammatory and dangerous ſymptoms ſhould enſue.

In the experiment under conſideration, one hour's interval brought back the pulſe to its firſt ſtandard of 64. This would ſuggeſt alſo the time for repeating our doſe; but in this we may err: experience only can determine it. In Hydrophobia, where a few hours become of the higheſt magnitude, frequent repetition of an uſeful remedy will be proportionally important: long intervals, and under doſes may bring our remedy into diſcredit, by the patient's loſs of life, while more judicious doſes might have produced happier effects.

It would appear likewiſe that different perſons are differently affected by oxygene, as indeed they are by every other medicine. Where it is found to diſagree, or to be in any reſpect injurious, this can readily be removed by exhibiting it in a leſs concentrated ſtate. Let it be diluted, and different reſults will follow. The degree of ſtrength muſt moſt certainly be tempered to the individual, meaſured by our own obſervations on his pulſe, and by his feelings.

Mr. Atwood's caſe, among others, will prove the advantage to be derived from oxygene in

moſt

moſt dangerous ſituations.[x] It may be ſaid, that there are no ſphacelating ſores in Hydrophobia, as happened here. The diſſections however already detailed prove both ſtomach and œſophagus to be ulcerated, and theſe of a ſpreading eryſipelatous nature, tending as ſpeedily to fatality as the ulcer on Mr. Atwood's leg. We have ſeen from ſome ſymptoms that have occurred in Hydrophobia, ſuch as violent craving for food, and devouring it greedily, and the ulcerated condition of the ſtomach itſelf, the morbid alteration of the gaſtric juice. We obſerve the ſame in Mr. A.'s caſe, and we find them removed by an hyper-oxygenated atmoſphere. We find likewiſe a conſtant and unconquerable watchfulneſs in Hydrophobia; Mr. Atwood had long experienced the ſame, but on the ſecond day of inhaling the vital air----"paſſed the ſweeteſt night! ſuch as I am ſure," adds he, "I have not enjoyed theſe four years."[y] Other inſtances are recorded, where the ſame happy effects followed its uſe.[z]

Mr.

[x] Vide Beddoes's Conſiderations, vol. 1, edit. 3.

[y] Atwood's Journal, ibid.

[z] Hydro-carbonate gas has been recommended for inducing ſleep. Mr. Barr we have ſeen ſtrenuouſly to contend

Mr. Boothby, after breathing vital air the firſt time, "ſlept better the firſt night than he had done for ſeven months." Diſeaſe aſthma.

Mrs. Barratt, who was cured of aſthma by vital air in ſix weeks, ſlept well from the firſt day

tend for it. Here he is followed by Cavallo, who is led to this from the property it poſſeſſes of producing inſenſibility to pain, of diminiſhing irritability of fibre, and thence of the probability of its proving a remedy in rabid hydrophobia.

As a temporary narcotic I ſhall not object, if the diſtreſſing watchfulneſs, which conſtantly attends this diſorder, cannot be removed by the uſe of oxygene. For the reaſons already delivered, its uſe would appear ill adapted to any thing farther than a temporary inſenſibility. But ſhould it prove in this reſpect ſuperior to opium, it ought not to be rejected.

Vertigo is almoſt a conſtant attendant of its exhibition; but a lightneſs about the breaſt, as if the part was totally removed, is likewiſe experienced. A perſon who inhaled it expreſſed his feelings by ſaying he had nothing left about him but his head. If diluted from twenty to thirty times, it may be inhaled without danger. I do not ſee the impropriety of occaſionally inhaling it at the ſame time with oxygene; I mean for the purpoſe of procuring reſt.

For inflammatory diſeaſes it has proved an uſeful remedy, even ſuperior to V. S. (vide Cavallo's Eſſay on Factitious Airs) but it has been ſhown in another place, that little or no inflammation accompanies Hydrophobia. Hydro-carbonate alſo is ſubject to an inconvenience, from its producing a recurrence of vertigo and faintneſs, frequently returning at uncertain intervals, without a renewal of the doſe.

day ſhe breathed it. The quantity ſhe breathed was two quarts vital, and thirty atmoſpheric air.

Dr. Redfearn's patient, an aſthmatic lady, breathed ſometimes a cubic foot of vital air undiluted. She ſlept very ſoundly always after it. The ſenſation felt from it was a glow, like what is experienced from peppermint water. She continued this plan, for four months, with great relief.

Mr. Phipps adds his teſtimony in a caſe under his care, where vital air procured good ſleep, with removal of great and conſtant pain, where opium, in doſes of 112 to 120 drops gave only ſome temporary eaſe, with a little unrefreſhing ſleep. The quantity breathed, and the proportion, was from one to two quarts of vital, to eighteen of atmoſpheric air for a doſe.

Mr. Danby, who was affected with paralyſis, from drinking port wine at an inn impregnated with ſugar of lead, received ſuch benefit in the courſe of a week, from inſpiring oxygene, that along with reſtored motion of his hands, of which he was totally deprived, from ſleepleſs nights they were ſound and refreſhing. The doſe was two quarts of vital air to

forty

forty atmoſpheric: when a larger portion was uſed it was hurtful, by producing pains over the body.

Mr. Alderſon's patient, a chlorotic young lady, could not ſleep: ſhe took vital air, even a quart undiluted at a doſe: ſhe not only ſlept well afterwards, but could not ſleep without it.[a]

In the removal of convulſions, which are ſo excruciating in Hydrophobia, eſpecially convulſions of the diaphragm, oxygene has given happy relief. In theſe caſes we have hitherto fled to opium, and for the moſt part have been diſappointed; and in other diſeaſes affecting this organ the ſame diſappointment has followed. No leſs than 300 drops of laudanum, in

[a] In the preceding review we have ſeen hydro-carbonate gas induce ſleep; in the preſent here are many inſtances of oxygene eminently poſſeſſing this power. How are theſe to be reconciled, ſince they are ſubſtances of an oppoſite nature? This difficulty will be ſolved, in ſome meaſure, by reflecting on the nature and cauſes of irritability under different ſtates of the habit. Irritability preventing ſleep, proceeding from *direct* debility, is removed by tonics and corroborants, and by oxygene as one of theſe. *Indirect* debility, accompanied with high irritation, proceeding from previous action morbidly increaſed, will be removed by hydro-carbonate gas, lowering the ſtate of action, and ſuſpending for a time ſenſibility to ſtimuli.

in diaphragmatic ſpaſms, have been adminiſtered; but it rendered the patient frantic, without procuring a ceſſation of the convulſion. Oxygene was inhaled and a ſpeedy cure ſucceeded; yet the diſeaſe was inveterate, from a three year's duration, and ſingularly diſtreſſing in all its paroxyſms, and with daily reiteration.[b]

Mr. Phipps teſtifies to the uſe of vital air in removing violent ſpaſms. We find dyſpnœa, and palpitation of the heart, greatly relieved by it.[c] To a certain degree theſe form part of hydrophobic diſtreſs. We have ſeen in every hiſtory of the diſeaſe, from the earlieſt to the lateſt times, an averſion to contact with cold air: oxygene imparts warmth, and gives a diſpoſition to the body to reſiſt cold. We find it capable of being abſorbed by the ſkin, and capable in this way of affecting the ſyſtem. When it is introduced into the cellular membrane of animals, it is not only abſorbed, but more rapidly abſorbed than the other gaſes, in this way producing hilarity and cheerfulneſs.[d]

We

[b] Vide Beddoes's Conſiderations.

[c] Ibid paſſim.

[d] Vide Dr. Maxwell's Theſis Edinburgh, 1787.

We have ſeen timidity and melancholy, in like manner, the conſtant concomitants of this diſeaſe: we find them removed, at leaſt to a certain degree, by imparting to the habit a greater proportion of vital air. In a word, we can diſcover, even from the confined experience we already poſſeſs, ſeveral other ſymptoms, forming a part of Hydrophobia, and ariſing from an exhauſtion of oxygene, yield to its re-introduction. Here might be recited a great number of the ſpecies of ſpaſmodic diſorders.[e]

No difficulty attends the application or preparation of factitious airs, with a proper apparatus "To procure," ſays Dr. Beddoes, "a doſe of factitious air, by means of Mr. Watt's apparatus, will, I think, be found more eaſy than to dreſs a joint of meat. In ſeveral inſtances under my eye, a ſervant of plain underſtanding has managed the apparatus perfectly: in one, a maid ſervant has proved quite equal to the taſk."

In

[e] Should it be found expedient to make the trial (a trial at all events is worthy of proſecution) it may be neceſſary to ſuffer the oxygene gas to ſtand ſome time in the veſſel after preparation, before uſing, to depoſit the particles of ſuſpended manganeſe to ſubſide.

In adminiſtering oxygene air it would perhaps be adviſable to begin with ſmall doſes, repeating them frequently, gradually augmenting the quantity and ſtrength. In ſeveral caſes[f] five parts to thirty of atmoſpheric air were the proportions uſed.

Mary Leucraft inhaled thirty quarts of atmoſpheric air, mixed with two quarts of vital air. This appears to have been her daily doſe: no inconvenience followed. She was cured by this plan. Her diſeaſe was Aſcites.

The lad Mead inhaled daily two quarts of vital air, diluted with thirty-ſix of atmoſpheric, without inconvenience, and with benefit. His diſeaſe was Hydrocephalus. The blindneſs which took place from the preſſure of the water on the origin of the optic nerve, was removed in three days, a proof of its action on the abſorbents of the brain.

Sir William Chambers inhaled two quarts of vital air, diluted with fifty of atmoſpheric, every ſecond day for two months, without injury. Here it may be obſerved, that a quart can be taken in at a full inſpiration.

Mr.

[f] Vide Beddoes's Conſiderations.

Mr. Barbar inhaled one quart of vital air, mixed with nineteen quarts of atmoſpheric, daily for ſome time; and afterwards two quarts of vital air daily, mixed as above, without inconvenience, and with a complete cure of Hydrothorax in four weeks.

Dr. Darwin's patient breathed daily eight gallons of vital air, with the ſame quantity of atmoſpheric, procured from Exeter manganeſe; and afterwards the ſame quantity without mixture, experiencing no inconvenience.

Mrs. Barker inhaled vital air in the proportion of two quarts of vital to ſixty atmoſpheric air. Her diſeaſe was a Cancer.

Theſe are a few of many inſtances of the ſafety, as well as utility of inſpiring this gas.

Mr. Watt, from his experience, obſerves, that ſmall doſes, while it obviates every idea of danger, would appear beſt ſuited for its communication to the blood, and conſequently of reaping its full advantages;[s] for when it was inſpired in large proportions the greater part of it was again returned by the next expiration, and loſt, while a more gradual method of

[s] The ſame has been obſerved of hydro-carbonate gas. Vide page 90.

of receiving it into the air veſſels of the lungs infured its abſorption into the ſyſtem.

Theſe caſes will farther prove how advantageouſly it may be applied to quicken the abſorbents, and check diſeaſed ſecretions. This is an effect which we find tonics generally produce; hence oxygene may be conſidered as a tonic. If we view it in this light we may have hopes, from its quick and ſudden action, of the ſpeedy ſtop it will occaſion to that morbid and abundant ſecretion of the ſtomach and œſophagus, with perhaps the ſalival glands, ſo diſtreſſing to the patient, and ſo univerſally preſent in every hydrophobic caſe.[h]

Dr. Beddoes obſerves, that ſometimes by reſtoring the activity of a languid part, it removes the ſenſation; and ſometimes by diminiſhing ſenſibility, or giving general energy to the ſyſtem, it deſtroys habits of morbid action.

Three

[h] If it be given undiluted, and in large quantity, ſo as to raiſe ſudden inflammation, the great activity induced on the veſſels creates a proportionable ſecretion, and mucus in theſe caſes will be more than commonly abundant. This took place in an experiment where a kitten was immerſed in oxygene gas, and where the lungs were found inflamed, and the throat and fauces ſtuffed with mucus.

Three or four days, it is true, are but a ſhort period for the trial of this remedy, in which Hydrophobia runs its courſe; but an objection of this kind will lie more forcibly againſt every other medicine, becauſe none can ſo immediately enter the general habit, or ſo immediately ſhow its active powers. This activity will appear from the changes which even a few doſes produce on the general habit. Animals immerſed in it but for a ſhort time, had thereby their muſcles rendered firmer and harder; and after inſpiration, if directly killed, their blood coagulates almoſt inſtantaneouſly.

I have ventured thus to hazard a conjecture on the probable good effects of oxygene in the cure of this diſorder; I have ventured it from a conſideration of the futility of every means of relief hitherto adopted; I have ventured it perhaps more on the principles of empiriciſm, than on juſt induction from the nature of the complaint; but who is the inveſtigator hitherto able ſatisfactorily to arrive at it! I have hinted this opinion under the ſuppoſition of hydrophobic virus entering the ſyſtem, and by a certain modus operandi difficult to trace in every link, creating a certain ſet of actions, and inducing changes, of which the abſtraction of oxygene

may

may form the principle. I would not however be underſtood as adviſing the inhalation of factitious gaſes to ſuperſede the uſe of thoſe ſubſtances denominated *tonics*, remedies extolled by the lateſt, and moſt philoſophic writers on this diſeaſe.

Arſenic eſpecially I would recommend as one of the moſt powerful tonics perhaps yet diſcovered. The uſe of this, and the inſpiration of modified airs may proceed together. They are applied to different ſurfaces, and in the exhibition will not interfere. If difficult deglution ſhould give an opportunity (and in many inſtances we find it partially overcome) the medicine may be exhibited, whether alone or in combination; either in ſome ſubſtance finely levigated, as in the Tanjore pill; or in aqueous ſolution, or involved in other forms, in crumbs of bread.

I have ſaid nothing reſpecting applications to the ſuperficies of the body, unleſs what is hinted under the head of bathing and frictions. But the diſeaſed ſenſibility of the ſkin, evident by the uneaſineſs expreſſed on the gentleſt motion of the air, and often on the ſlighteſt preſſure of the bed clothes, would indicate the propriety of ſome external application,

tion, as a defence againſt theſe noxious powers, eſpecially the former.[i] Is the abſorption of the ſkin increaſed or diminiſhed? Are the ſecretions and excretions proportionally greater than what is imbibed by the ſurface from the atmoſphere? Queries of this nature may be termed a needleſs curioſity; but it is a curioſity laudable, ſince we ſhould attempt to diſcover every thing; and there is no inſurmountable obſtacle or difficulty in the way of obtaining ſuch information.

Having brought theſe obſervations, relative to the cure, before the reader, I leave them to his conſideration. They are indeed imperfect, and perhaps he may with juſtice complain of my leaving the ſubject nearly in as much

i If hydro-carbonate gas be admiſſible in this diſeaſe, it is poſſible that the application, in form of an air bath, might be a means of meliorating the diſeaſed ſenſibility of the ſkin. Appropriate contrivances (of no difficult invention) would render it eaſily applicable. It may be thus confined in the veſſel a conſiderable time without mixture with the atmoſphere. The patient being ſet in a veſſel, with his head beyond the reach of the gas, to prevent its entering his lungs, might remain in this poſition ad libitum. When this ſpecies of gas was applied to a part deprived of cuticle, the ſmarting pain immediately ceaſed, and inſenſibility followed, which as conſtantly recurred when the ſore came in contact with the common air.

much uncertainty, in this reſpect, as before my inveſtigation. He will allow however the taſk of complete elucidation to be arduous, and I am willing to acknowledge much of the uncertainty which he may attribute to me.

SHORT

SHORT RECAPITULATION OF THE MEANS OF CURE.

THE diſeaſe, it is admitted, is ſeated principally in the nervous ſyſtem. Debility ſeems to form its characteriſtic.

Two ſtages are apparent in its courſe; a firſt, or incipient; and a ſecond, commencing with Hydrophobia, and ending in death.

The diſorder is capable in the firſt ſtage perhaps of cure; but never yet performed in the ſecond.

1*ſt*. *Emetics*. The firſt means of relief it has been thought ſhould be by emetics; the reaſon given is from an appearance of bile in the primæ viæ; but emetics are improper in a com-

complaint of direct debility. They add to irritation, ſeldom diminiſh it, unleſs by the removal of obſtructions in the veſſels by the force of concuſſion; or by the opening of the pores of the ſurface to give an exit to retained perſpiration; but the latter is not indicated in Hydrophobia.

2nd. Cathartics. Theſe are little better adapted to the removal of this complaint, than emetics. They are detrimental in caſes of debility, and often improperly exhibited here. Fœtid ſtools are no teſt of their utility; no guide for perſiſting in their adminiſtration. A gentle cathartic is admiſſible here, as in other diſeaſes of debility; but farther it would be improper to proſecute them.

3d. Injections. Theſe are far leſs exceptionable, nay are often neceſſary, ſeldom debilitating; and may be the medium for introducing medicines, or for nutriment, or for both.

4th. Bathing. Neither the hot nor cold bath have ever been ſucceſsfully uſed. The former, though it gives temporary relief in ſome inſtances, ſoon loſes its effect. The latter, though carried almoſt to drowning, produces no better conſequences. Death has even been haſtened by

by plunging the patient into cold water. This concluſion is drawn from many trials.

Cavàllo hints at ſome caſes,[k] ſaid to be cured by opium and cold bathing; by ſudden ſubmerſion, almoſt to ſuſpenſion of life; but he cannot remember reſpecting their authenticity; whether he read of them, or whether the communication came from the relation of ſome friend. It was moſt probably the former, for books tell of ſuch cures; but if caſes of Hydrophobia have been removed by this means, they were not *rabid*, but *tetanic* inſtances. They were convulſions, and difficult deglutition, ariſing from tetanus, not from the poiſon of a rabid animal.

5*th*. *Sudorifics----Stimulants*. Sudorifics are even leſs adapted to give relief. Volatile alkali, whether as diaphoretic, or merely ſtimulant, is likewiſe proved deluſive. More however may be ſaid for this, than for ſeveral of the others, and the practitioner would do well to give it a fairer trial than what has yet been done.

The uſe of the nitric acid has been ſuggeſted, which merits conſideration.

6*th*.

[k] Vide Eſſay on the Medicinal Properties of Factitious Airs. p. 109.

6*th. Venæſection.* None of the remedies ever propoſed in this diſeaſe has been more abuſed than Venæſection. None has proved leſs uſeful, and none ſo univerſally employed, in ſpite of its conſtant failure, which ought to have long ago created doubt. One man followed another in the ſame beaten tract, without inquiry; but falſe theories of the diſeaſe, not leſs than the repeated authority ſerved for its ſupport. In every rabid caſe it is objectionable, nay even in tetanus, or Hydrophobia ariſing from tetanus. None more ſuddenly creates depletion; and the diſeaſe now under review is marked in a peculiar manner with debility.

7*th. Bliſters.* Whether they be uſed in their capacity as ſuch, or in their more partial capacity of rubifacients, they are admiſſible to a certain degree; but their limits are circumſcribed from the nature of their operation, and when they are to be applied, require attention, that abuſe may not follow, where at leaſt ſome uſe may be derived, under proper modifications. The aſſiſtance is found to be ſlender.

8*th. Embrocations,* which are ſomething of the ſame nature, if ſufficiently ſtimulant, may be applied to the throat, the pit of the ſtomach, and above all to the ſpine. They will ſtimulate cutaneous veſſels into greater action, and

may

may meliorate the diſeaſed ſenſibility to cold air, by their cauſing, from their ſtimulant power, a change in the mode of action, and conſequently extrication of more heat.

9*th*. The intemperate and vexatious perſuaſion of the patient to ſwallow drink, is altogether improper. Curioſity is here gratified at the expence of increaſed miſery, to a moſt commiſerable object. Antipathies, were it nothing but antipathy, to certain ſubſtances, in every ſpecies of diſorder, are to be regarded.

10*th*. *Mercury*. This famous remedy, on which ſo much of late years has been written, may be diſmiſſed, without regret, from the remedies of Hydrophobia. Not an inſtance of ſucceſs can be fairly brought forward to ſup port its claims.

11*th*. *Running*. It muſt be obvious, that in running, or violent exerciſe, a truly ſlender ſolace is ſet forth. If we conſider its operation, it would ſeem to eſtabliſh a point in pathology of no ſmall magnitude; it is a clear indication of the patient's general weakneſs. It proves a deficiency of due ſenſibility in the heart; and that the ordinary ſtimulus of the blood is no longer able to give a force of ſyſtole equal to the propulſion of the contents with appropriated

priated energy, through the arterial ſyſtem. Hence ſtagnation in the pulmonary ſyſtem, ſenſe of ſuffocation, &c. which running, as an increaſed ſtimulus, temporarily removes.

12*th. Cold.* The application of cold, or more properly, ſudden abſtraction of heat, to benumb the parts, and ſtop oſcillation and irritation, it is evident, cannot be permanently uſeful; becauſe, if continued, the death of the part muſt follow. The ſame objection may be brought againſt ligatures; yet theſe will admit of application to a certain degree, till more effectual means, for removing irritation in the part, can be prepared.

13*th.* This is its deſtruction, by the knife, by cautery, or by cauſtic alkali. Let this be accompliſhed at the moment when ſenſations of pain, or apparent inflammation give warning of the approaching malady. I am not without hopes, that by proper attention to this ſymptom, the diſeaſe may be checked in its commencement.

14*th. Oil.* This has been tried, with no advantage, in rabid Hydrophobia. Its uſe, even in Hydrophobia from fear, is problematical. It is not clear but that the patients, to whom it has been apparently ſucceſsfully adminiſtered,

ſtered, would have recovered from the *panic* under which they laboured, had it never been applied.

15*th*. *Vinegar*. Vinegar, in this country, has been equally futile.

It is no new remedy; the practice is of ancient date. Æſchrion, preceptor to Galen, exhibited crab's-claw powder againſt the diſeaſe; and Galen, who followed his maſter's practice, gave the ſame powder internally, and uſed it as an application to the wound, with the addition of frankincenſe, oppoponax, and gentian root, mixing them together with the *ſharpeſt vinegar*.[l]

The oxalic acid I have ventured to hint at, ſhould an acid be thought beneficial, as better adapted, from an idea that the quantity of oxygene in a given bulk is greater, and that its coheſion with its baſe is looſer, and more readily ſeparable, than that of the acetous acid or vinegar. But the practice cannot be enforced on the ground of experience, as it has never been attempted.[m]

16*th*.

l Vide Galeni Opera.

m Vide Bergman's Eſſays, vol. 1, page 304. Take of pure refined ſugar, finely powdered, one ounce; nitrous acid

16*th*. *Antiſpaſmodics*. The claſs of antiſpaſmodics, as diſtinguiſhed by this name, have not anſwered. Opium, the moſt powerful, inſtead of proving uſeful, appears to have been detrimental under every management hitherto adopted. I apprehend that its uſe muſt be very guarded, to prevent the miſchief attendant on its abuſe. I am inclined to diſcard it entirely.

17*th*.

acid three ounces. Put them in a glaſs retort, or any glaſs thin enough to bear a moderate heat. When the ſolution is completed, and the phlogiſticated part of the nitrous acid has flown off, lute on a receiver, and gently boil the ſolution.

When the liquor becomes of a dark brown colour add the ſame quantity of acid as before, and continue the boiling till the ſmoaking and coloured acid has entirely diſappeared. Pour the liquor in the receiver into a large veſſel, and upon cooling, ſmall quadrilateral cryſtals will be formed. Theſe are the oxalic acid, or acid of ſugar.

We have Bergman's authority for affirming this acid to belong likewiſe to the animal kingdom. It has been diſcovered (vide page 66 and 92) to be a conſtituent part of the blood. It may poſſibly therefore be morbidly abundant, or morbidly deficient. Nothing is more eaſy than the proceſs for obtaining this acid; but ſhould it ever be attempted as a remedy in this diſeaſe, it may now be purchaſed at every druggiſt's. It is an expenſive ſalt; but were it uſeful, this conſideration would not weigh againſt its exhibition.

17*th. Hydro-carbonate Gas.* Some late writers, Mr. Barr, and Cavallo after him, have ſuggeſted the uſe of the hydro-carbonate gas, to remove irritation, and to induce ſleep. I have ventured to ſtate objections to it as a general remedy, though as an auxiliary, in a limited degree, it is worthy of a place; but from its great activity, i. e. from its ſudden effects, and theſe of a moſt powerful kind, tending almoſt to immediate death in an imprudent doſe, the practitioner muſt uſe the utmoſt caution in its adminiſtration. In producing temporary ceſſation from pain, where pain is exceſſive, it appears to be powerful.

A bath is ſuggeſted of this äerial fluid, with a view to obtund cuticular ſenſibility, ſo excruciating in Hydrophobia. For this purpoſe a narrow tall veſſel, ſuch as a ſmall caſk, may be procured, into which the patient may be put, keeping his head above the caſk. Into this the hydro-carbonate, previouſly prepared, may be introduced; for no great difficulty will obſtruct the management, when it may be confined in the caſk by cloths, or ſoft chamois leather, ſurrounding the patient's body, and preventing its mixture with the atmoſpheric air.

This

This however is an employment of ſome danger to the aſſiſtants, and to the patient, in the act of extricating him from the veſſel, to prevent its admixture with the air of the room, which may create, to ſay no worſe, vertigo and head-ach. It ought to be done near a chimney, that it may be carried up by the current. A commodious contrivance, air tight and ſecure, for ſuch a bath, would not be difficult to invent.

This perhaps is not the only ſpecies of diſeaſe to which ſuch äerial immerſion may be confined. Might it not be employed with advantage in caſes of ſevere burns, whether produced by exploſions of gun-powder, or of hydrogene gas, in coal pits and other mines, or by ſcalding with boiling fluids? Its property of deſtroying ſenſibility, of mitigating ſevere pain, favour this ſuggeſtion. Burns are accompanied with moſt excruciating pain.

18*th*. *Tonics*. This claſs of remedies is not only unequivocally admiſſible, from the pathology of the diſeaſe, but ſtrenuouſly to be inculcated. The diſeaſe is ſtrongly marked by debility, which tonics as ſtrongly oppoſe. Bitters are many of them tonics; but vegetable bitters are bulky, and in a powdered form at leaſt

leaſt the ſtomach here will reject them: even decoctions, for the ſame reaſon, are objectionable. The metallic tonics are therefore preferable: iron, zinc, copper.

From the mineral kingdom another ſubſtance has been lately recommended.

19*th*. *Arſenic*. This ſubſtance merits the higheſt attention, and promiſes no ſmall advantage. It is ſtrange, that till lately this could not be mentioned in medicine, without exciting great apprehenſion and terror; yet poiſons not leſs deleterious, viz. preparations of mercury, of antimony, and even opium itſelf, were in daily uſe with the faculty. In the form of a pill, named tonic or Tanjore pill, this mineral has been exhibited both againſt the bites of ſerpents and rabid animals. From it high expectations are now entertained.

20*th*. *Oxygene Gas*. Under the head of tonic medicine I would claſs oxygene gas, or vital air. Its uſe I have here recommended, from the perſuaſion of too great a ſubtraction of it from the habit, created by the force of the poiſon in what way ſoever it may operate. The mode of exhibition is of late made conſiderably eaſy by the labours of the ingenious Beddoes. This active ſubſtance is not introduced here

here as a catholicon, but as an aſſiſtant to other endeavours, eſpecially in co-operation with tonics.

Such are the ſuggeſtions which have occurred in reviewing this malady, and which the pathological reader is earneſtly requeſted to re-conſider. Let him ſedulouſly render his aid in bringing them to perfection, or, by pointing out other means more certain, remove their ambiguity and eſtabliſh the ſafety of mankind againſt a diſorder deplorable and incurable, from its firſt diſcovery in remoteſt antiquity, to its lateſt inſtance of fatality.

An Aſſertion relative to the earlier or later Commencement examined.

SAUVAGES[n] affirms, that Hydrophobia commences ſooner when a bite is received in the face, than when inflicted in a lower, or more diſtant part; and he is followed here by Van Swieten. This has been referred by others to the ſalival glands, affirming it to be a fact, that the nearer the wound is to their ſeat, the ſooner proportionally will the diſeaſe follow. With a view to aſcertain this a few caſes are collected, wherein the time of the bite, the time of acceſſion, and the part wounded are pointed out. The examples adduced are indeed too few to eſtabliſh a general concluſion, but no more are afforded by the books to which, at preſent, I have acceſs.

As

[n] Vide Diſſertat. ſur la Nature et Cauſe de la Rage, page 4.

As far as they go the reſult militates againſt the aſſertion; nor am I without doubts whether it could be eſtabliſhed were even a much greater number of caſes collated.

I have thrown them here into a tabular form, that the eye may at once examine the proportion, and eſtimate the difference. They are arranged in three claſſes of wounded parts.

1ſt. Wounds received on the head, face, neck, before or behind.

2nd. Thoſe received in the upper parts of the trunk, comprehending the breaſt, ſhoulders, before and behind, with the upper extremities from the ſhoulders to the ends of the fingers.

3rd. The under part of the trunk of the body, comprehending from the epigaſtric region downwards, back, loins, and hips, with the lower extremities from the top of the thigh to the ends of the toes.

TABLE

TABLE.

1ſt. Wounds on the Head, Face, and Neck, before or behind.

No.	Patients.	Parts bitten.	Distance.
1	A lady at Modena	lip -	50 days
2	Mr. Turner's -	cheek -	23 days
3	Dr. Mead's 1ſt	cheek -	32 days
4	John Brown -	cheek and ſhoulder	4 months
5	------- Bean -	ſhoulder -	26 days
6	------- Nourſe -	cheek -	30 days
7	Dr. White's 4th	cheek -	1 month
8	Alderſgate Diſpenſ.	cheek -	2 months
9	Poncelin's -	face, head, &c.	32 days
10	Middleſex Hoſp.	cheek -	25 days
11	C. Bullock -	cheek -	37 days
12	Maſter Rowley -	lip -	36 days
13	------- Macey -	right ear -	20 days

No.	Patients.	Parts bitten.	Distance.
14	-------- Cobb	- cheek & lip	11 days
15	-------- Johnſon	- cheek -	3 months
16	Stephen Race	- face & lips	6 weeks
17	Francis Tweed	{throat, cheek, and chin}	20 days
18	Jeremiah Groves	breaſt & neck	96 days
19	At Coggeſhall	- face -	3 weeks
20	-------- Niece	- {face, arm, & ankle}	18 days
21	Samuel Smith	- eye-brow -	45 days
22	------ Briquet	- cheek -	58 days
23	Jean Petit	- head, face, &c.	52 days
24	Jean Arbelot	- cheek -	68 days
25	-------- Caſtinel	- lip -	60 days
26	Dr. Thieſſet's	- head -	58 days
27	Dr. Dupleſſis's	{cheek, arm, & thigh}	3 months
28	Louis Michaut	- cheek -	3 months
29	Cath. Champion	cheek & lip	1 month

2nd. Wounds in the upper Part of the Trunk, viz. Breaſt, Shoulders, before and behind, with the upper Extremities.

1	James Corton	- hand -	6 weeks
2	Dr. Howman's	- hand -	6 weeks

No.	Patients.	Parts bitten.	Distance.
3	Dr. Mead's 2nd	finger	66 days
4	——— 3rd	hand	3 months
5	Student of phyſic	finger	1 month
6	Stephen Bellaſs	thumb	19 months
7	------ Chriſty	hand	6 weeks
8	Dr. Munckley's	hand	39 days
9	Dr. Dickſon's 2nd	arm	4 months
10	James Patton	hand	12 weeks
11	Dr. Vaughan's 2nd	finger	9 months
12	——— 3rd	wriſt	1 month
13	Dr. White's 1ſt	wriſt	1 month
14	——— 2nd	wriſt	1 month
15	Abraham Palmer	hand	38 days
16	Dr. Berkenhout's	arm	6 weeks
17	Mr. Dawſan	thumb	6 weeks
18	Henry Rider	wriſt	18 months
19	------ Middleton	hand	12 days
20	At Edinburgh	hand	72 days
21	Mary Strong	finger	2 months
22	Marie Guittard	hand	31 days
23	François Ethéveniot	wriſt	44 days
24	Man-cook	palm of hand	40 days
25	Dr. Mignot de Genety's	arm	1 month
26	Sieur Gravan	hand	38 days

3d. *Wounds in the under Part of the Trunk of the Body, from the epigaſtric Region downwards, with the lower Extremities.*

No.	Patients.	Parts bitten.	Distance.
1	------ Boyer -	leg -	74 days
2	George Pollock -	leg -	3 months
3	------ Bellamy -	leg -	4 months
4	Dr. White's 3rd -	leg -	26 days
5	John Slight - -	leg -	60 days
6	Dr. Gray's -	thigh, arm, & back	24 days
7	Thomas Hogg	right leg & right hand -	27 days
8	Elzeard Roche -	foot -	46 days
9	M. A. Proghammerin	ankle -	60 days
10	An Advocate -	ankle -	6 months
11	A Maſon, aged 16 -	leg -	56 days
12	——— aged 22	leg & arm	8 months

In the firſt claſs are 29 examples, of theſe are no fewer than 21 from one to four months, of whom twelve are wounded in the cheek, and four in the lip. The cheek and lip are places almoſt contiguous to the ſalivary glands, yet

yet the patients are not attacked till a late period.

The ſecond claſs contains 26 examples, 19 of which exceed a month. In this claſs we find the longeſt period of attack on record, viz. Bellaſs, bitten on one of the upper extremities.

The third claſs conſiſts only of 12 examples, 10 of which exceed a month before the attack commences. The number in this claſs are indeed too few for our forming from them an accurate average.

On the whole, it will eaſily appear, that the obſervation of the above authors was vague and looſe. Had it even been true, little practical uſe could have reſulted from it; but as the fact ſtands, it ſerves to prove the ſalival glands to have no effect on the earlier or later commencement, which muſt be derived from ſome other law. This has already been inveſtigated;[o] and it was there referred to the nature of the poiſon; its mode of infecting the body, and the conſtitution of the individual.

We find in this table, comprehending 67 examples, only 12 wounded on the lower part of

[o] Vide vol. I,

of the body and extremities. That ſo few happen on the extremities ariſes from the habit of the animal in catching its prey.

The wolf always lays hold of it ſtanding on his hind legs, ſuddenly throwing his fore legs on the breaſt or ſhoulders. The domeſtic dog, a branch of the ſame ſtock, for the moſt part leaps on the perſon or animal he wounds.

The cat likewiſe ſprings on her prey; but being ſmall, compared to the wolf and dog, catches an inferior part, the leg, or the arm and hand, eſpecially in a hanging poſture.

In their rabid ſtate they follow Nature's law, ſeizing the unhappy victim as they uſually do their prey.

Hydro-

Hydrophobia in Man not Madneſs, as uſually ſtyled; nor communicable by him----

Not communicable by other Claſſes of Animals, the Dog and Cat forming the Exception.

Violent Death in the human Hydrophobic unneceſſary and cruel.

THOUGH Tulpius[p] many years ago, and after him ſeveral others, and ſome even of our Engliſh authors, as Vaughan, &c. pointed out the impropriety of denominating Hydrophobia madneſs; and though every hiſtory of the

p Opus non fuit, nec huic, nec aliis ægris (quos equidem vidi ſatis frequentes) mortem maturare, ſive per ſtragulam, ſive per culcitram ori (uti loquitur vulgus) impoſitam, quippe pereunt per ſe ſatis celeriter: utpote raro ſuperſtites, cum aquæ formidine in diem vel tertiam vel quartam; quibus addo, quod neminem hactenus, vel audiverim latrare, vel viderim mordere, necdum cuiquam detrimento fuiſſe rabidorum ſputa. Vide Obſ. Med. l. 1, cap. xx. p. 42.

the malady contradicts the idea, yet a contrary doctrine, long inculcated and long eſtabliſhed, held the opinions of mankind, and to this day even in our own country, eſpecially among the multitude, is far from being eradicated. The prevalent idea alſo of its communicability by man was another misfortune of a nature far from trivial.

Obſerve with what terror the minds of Stalpart and Themiſon were impreſſed on this head. The former conſtantly waſhing his hands to avoid the conſequences which he apprehended from touching the pulſe; and the latter tormenting himſelf, and ſwallowing medicines for an imagined diſeaſe.[q]

Nourſe, but for the interpoſition of his humane phyſician,[r] would have ſuffered a violent death, from the idea of his madneſs; yet no caſe of the complaint more ſtrongly proved the unimpaired ſtate of the rational faculties. The progreſs of the diſeaſe redoubled his ſufferings ---- " he had all his complaints aggravated by the improper conduct of his attendants, who, prompted by their fears, had almoſt perſuaded themſelves, that the opinion univer-

[q] Vide Diſſections, vol. I.

[r] Dr. Vaughan.

univerſally received by the common people of ſmothering ſuch unfortunate objects, was not only juſtifiable, but expedient; for I found them," adds he, "confining the poor creature under the bed clothes; by the united force of half a dozen ſtrong aſſiſtants, whoſe countenances beſpoke the terrible apprehenſion they were under." He was inſtantly ſet at liberty, and the people ſternly rebuked; but it rendered him afterwards (nor is it ſurpriſing) ſuſpicious of thoſe about him. This was in 1773.

By M. Portal's review of this diſeaſe, the ſame cruelty was practiſed in ſome parts of France very lately, before the year 1787;[s] and ſo late as 1794 a practice, though diſſimilar, yet ſevere, was followed in our own country. John Edwards, who contracted the diſeaſe at this time, was bound in a ſtrait waiſtcoat, and continued thus fettered for many hours, to the great aggravation of his ſufferings, till another practitioner relieved him from his confinement.[t] Nor is this a ſolitary inſtance: conſult the writings of the laſt twenty years, and ſeveral ſimilar will be found.

Let

[s] Vide Analytical Review, vol. 1.

[t] Vide Gentleman's Mag. for the year 1795.

Let the enquirer however peruſe the annexed caſes,[t] and let him be convinced of the rationality in its full perfection, in reſpect to the wonted ſhare poſſeſſed in health by every individual. It is true, the malady is often accompanied with dreadful exacerbations; ſo that for the time the patient is rendered incapable of governing his motions or actions, or reſtraining, in any degree, involuntary ſpaſmodic exertions, into which almoſt every muſcle of the body is thrown. During theſe it ſometimes happens, that they reſiſt the attendants employed in holding them in bed to prevent their being daſhed, by the contortions of their bodies, on the ground, or from otherwiſe injuring themſelves.

In theſe fits they have ſometimes involuntarily ſcratched, and ſometimes bitten the nurſes or others; but this is no more madneſs, than the convulſive exertions of an epileptic, or an hyſteric patient. Sometimes alſo the ſufferer has been impreſſed with a notion of an evil intention in the bye-ſtanders towards him. This has proceeded from the recollection of what he himſelf heard formerly on this ſubject. He is

[t] Vide Appendix

is haunted with the horrors of an untimely death, by which he believes he is about to end his days, and this even by the hands of his relations, and thoſe who ſhould be his protectors, or ſympathiſing adminiſtrators of relief. This conduct ariſes from an idea of ſelf preſervation, and the perſuaſion of the certain communication of the diſeaſe.

Theſe fits of delirium are but of ſhort continuance, and alternate with intervals of as much ſelf command, as much rational obſervation as is obſervable in complete health. Strangulation, or ſmothering between two feather beds prevailed too much at one period, occaſioned by miſtaking the nature of the malady.

Van Swieten teſtifies to the permiſſion of this cruelty even by the magiſtrates. This proceeded however from good motives, and a belief that it was better to ſuffer *one* to periſh, than to endanger the lives of many. It ſeems to have ariſen from a kind of analogical reaſoning, unſupported by juſt obſervation, that as the dog and cat kind communicated it, ſo muſt man to man, when he became infected. This, I am perſuaded, is not the fact. I can find no proof on which a perſon inveſtigating truth

truth ſhould reſt, either that the ſaliva falling directly from an hydrophobic on an attendant, or even the actual bite which ſometimes has taken place during the paroxyſm, was ever followed by any inconvenience more than would ariſe from wounds given by other means.

It has been known, that perſons have, without being infected, put their fingers into an hydrophobic's mouth, and drawn out, from time to time, the viſcid ſaliva. The ſervant who attended Dr. Munckley's patient, with the corner of a handkerchief, roped out the tough mucus adhering to his fauces.

Dr. Bouteille confirms the obſervation of the innocency of handling the ſaliva of a perſon under Hydrophobia.[u] In the ſame work may be found an inſtance of an hydrophobic patient, whoſe attendants, without the leaſt bad conſequences, not only received his breath into their faces, but with their fingers roped the ſaliva from his mouth, and were even ſcratched by his nails. The ſame impunity does not take place when the fingers are introduced into the mouth of a rabid dog, a proof

[u] Vide Mem. de la Soc. Roy. de Medicine, ann. 1783.

proof of which we have in the inſtance of M. de la Pryme's patients.[v] "A nurſe who was conſtantly with the child (Dr. Vaughan's third patient) who very often kiſſed it, and who repeatedly received its breath upon her face and mouth, has not experienced the leaſt ill effect from it." But a gentleman who took the ſame liberty with a favourite dog under the diſorder, by kiſſing it before it went to be drowned, ſuffered for his temerity.[w] This contraſt deſerves attention.

There are beſides inſtances where an actual bite from hydrophobic patients has been received with the ſame impunity. In one caſe the bitten part was immediately extirpated: nothing therefore can be concluded from it; but the others are caſes in point, againſt which no objection can be brought, and are ſtrong negative proofs of my opinion, which, till a poſitive fact to the contrary, well atteſted, can be adduced, I muſt continue to hold.

I entertain at preſent the ſame opinion of its incommunicability by quadruped to quadruped, with the exception of the dog and cat kind, which I reſt on the reſult of two or three expe-

[v] Vide Phil. Tranſ. [w] Vide vol. 1, p. 101.

experiments inſtituted for the purpoſe. Neither can the human ſubject return it to the quadruped, more than the quadruped can to his own ſpecies. Dr. Vaughan beſmeared a lancet with the ſaliva of a child then dying of the diſeaſe, and with it inoculated a dog on the noſe. In ſome remarks with which he concludes his valuable hiſtories, he adds, "two months are now elapſed ſince the dog was inoculated with the ſaliva taken from the laſt patient: he continues now, at this time, free from the diſeaſe." The Doctor promiſed the public the reſult of this trial, and as many years have ſince elapſed without farther intimation, we may reaſonably conclude no diſeaſe to have followed.

It is a well-eſtabliſhed fact, that the diſtance between the bite and the appearance of Hydrophobia, ſeldom in quadrupeds exceeds a month; and in the canine eſpecially it ſeldom exceeds three weeks. Mr. Edwards, who communicated Tweed's caſe, during the time the malady prevailed among the quadrupeds in his neighbourhood, inoculated a dog from the ſaliva of a cow, with the ſame want of ſucceſs. Now it is well known, that though many eſcape the diſeaſe among the human

race, who are bitten, yet few, if any, of the dog kind wounded by a dog continue uninfected. Hence, if any communicable infectious properties adhered either to the human ſaliva, or that of the cow, the dog appearing particularly ſuſceptible of the malady, it could not fail to induce the complaint at the uſual period.

With reſpect to the cat, we cannot ſo poſitively conclude, becauſe we have not *one* under the influence of the diſeaſe for *fifty* of the canine ſpecies. Whether this be owing to any peculiarity in theſe animals, or from their greater ſhyneſs and love of retirement in the day, expoſing them leſs to be attacked, is difficult to determine: the latter perhaps is the caſe. Nor can we with leſs difficulty explain, why the cat, of a ſpecies ſo different from the dog, can propagate the diſeaſe, which I believe all other animals are incapable of doing: yet the fact is certain.

Reaſoning analogically from this, and carrying our reſearches no farther, my opinion would ſeem to ſtand on a bad foundation; but analogies, as is well known, are but imperfect lights. The negative arguments above prove more, and muſt remain unrefuted, till over-

overturned by fact. A ſtory to the contrary has indeed lately been propagated, of a cow communicating the diſeaſe to a man, who fell a victim to it; but its fallacy has been detected.[x]

We may conſider this want of communicability among our domeſtic animals, from one to another, and the ſame inſuſceptibility of infection from one of our own ſpecies to another, as a peculiar bleſſing, rendering the effects of this hitherto unconquerable malady comparatively leſs portentous in its conſequences. When a ſatisfactory perſuaſion of theſe facts ſhall be entertained, no longer will the unhappy hydrophobic be deſerted in his agonies, nor the cruel practiſes juſt enumerated, be proſecuted.

It will be nugatory then to quote, as an illuſtration, the inſtance of the family at Cheſtertown in Maryland, who drank the milk of an hydrophobic cow: nor of the negroes on a farm in the ſame place having eaten of the fleſh of ſeveral hogs dead of the diſeaſe, without inconvenience or harm; nor others of a like kind detailed by ſome authors:[y] for if theſe ani-

[x] Vide vol. 1, p. 9.

[y] Vide Mem. de la Soc. Roy. de Medicine, ann. 1783.

animals were incapable of ſpreading infection, when under its influence, their fleſh and other ſecreted fluids muſt equally remain free, and be as innocently conſumed as other wholeſome viands.

It would appear, that nature has wiſely ſet bounds to the diſeaſes incident to the different kinds of animated beings; and that the maladies peculiar to one ſpecies do not, as a general law, ſpread into another. If, like the inſtance afforded by Hydrophobia, they be caſually ingrafted into an alien ſtock, they die, like hebrid animals, without ſucceſſion. Daily examples of this paſs before us. To what claſs of animals (ſave man) can the ſmall pox, meaſles, ſcarlatina, hooping cough, and other ſpecific diſeaſes be communicated? There are general diſeaſes indeed in all animals bearing ſtrong ſimilitude to one another. With catarrh, and ſome other general diſorders, horſes, cows, ſheep, and man are equally affected; but theſe proceed not from ſpecific poiſons. No mode of infecting will ſucceed in producing among the cow kind, the ſcarlet fever, though dropſies, diſeaſed livers, and ſuppurated lungs are common to them with man. Nor will any mode to bring the murrain, or

that

that ſpecies of diſorder peculiar to horned cattle, occaſionally ſo deſtructive in the northern parts of Europe, and ſo communicable among themſelves, ſucceed when attempted in the human race. This being acknowledged, the following fact will not ſeem extraordinary, which obſervation confirmed, that on a voyage ſheep did not communicate a fever, contracted by them on ſhip board, to hogs living in common with them in confinement; neither were the crew in any degree incommoded by it.

With reſpect to other diſeaſes among the human race, beſides what are mentioned, let it be added, that from repeated trials made for the purpoſe by the late Mr. J. Hunter, no diſeaſe followed from the inoculation of a dog, bitch, and an aſs, with the venereal virus, though ſo eaſily communicated and diſperſed among mankind by the uſual modes of contact.[z]

As to the ſmall pox, direct and unſucceſsful experiments have been made on the ſubject. "In the various attempts which I have made," ſays Dr. Woodville, "to communicate the

[z] Treatiſe on the Venereal Diſeaſe, c. 1. Sect. 6.

the ſmall pox to different animals, as dogs, rabbits, poultry, &c. both by the ordinary way of inoculation, and by injecting variolous matter into the viens, no diſeaſe was produced."[a]

This obſervation has been carried farther; and it is aſſerted, that among different tribes of the human race, where variety in colour and mode of living ſeem to form the chief diſtinction, there are alſo peculiar diſeaſes to which one is liable, and the other exempt. Thus it is ſaid of the Indians at Nantucket, that "they were carried off by diſeaſes which never infected the white inhabitants among them." Dr. Lining tells us, "that the negroes were never afflicted with the yellow fever in South Carolina, although conſtantly around the ſick; and theſe again have diſeaſes peculiar to themſelves, to which the whites are entire ſtrangers."[b] Surely we muſt diſcover here, the wiſe and benevolent purpoſes of the Author of Nature towards the different animated beings, deriving from his omnipotence their exiſtence.

Con-

a Vide Woodville's Hiſtory of Inoculation, vol. 1.

b Vide Meaſe on Mad Dog, p, 5, edit. Lond. 1793.

Convulſive Noiſe vulgarly called Barking.

THIS ſymptom, which has heretofore ſpread terror, and been conſidered as an indubitable mark of the diſeaſe, as well as a proof of the metamorphoſis of the ſufferer partly, as it were, into the canine nature, might truly, in the preſent day, be paſſed in ſilence as a ſuperſtitious error. But ſome who may peruſe theſe pages, written both for the common and medical reader, may yet remain uninformed of its true nature, and continue impreſſed with the idea of this occurrence. To theſe we ſhall ſay, that the noiſe which appears imitative of barking, and which credulity has varied into many frightful ſhapes, is a mere convulſive effort to free the throat and fauces from a troubleſome, irritating, and accumulated mucus, derived from an increaſed ſecretion adhering to them, often thick, ropy, and difficult to diſ-

diſcharge. The diſeaſed ſenſibility of theſe parts, heightened by the touch of any fluid matter, creates the convulſive expiration attended with a noiſe, which a heated imagination converts into the voice of a dog in the act of barking. This convulſive noiſe however is far from being ſtrongly marked in every caſe. Some authors have not heſitated to diſavow altogether the ſemblance of barking. Tulpius expreſſly ſays "*neminem hactenus audiverim latrare.*"[c]

Other diſeaſes likewiſe change the tone of the voice. The œſophagus in Hydrophobia ſuffers however in a particular manner: beſides the ſecretion mentioned, its muſcles are thrown into ſpaſmodic contractions, of which the contiguous larynx, where the organs of modulation and ſpeech are ſeated, equally partakes, producing a variety in the tone rapidly reiterated by the convulſions.

[c] Vide Obſ. Med. lib. 1, cap. xx. p. 42.

Reflec-

Reflections on the remote Cauſe, or the Manner in which this Diſeaſe is produced in the Canine Tribe.

TWO different opinions are entertained on this ſubject: by one ſet of pathologiſts it is maintained, that the ſeeds of this diſeaſe are referable to climate and diet; to cold and heat: by the other it is conſidered as the effect of inoculation, or is only the conſequence of infection received from an animal directly under its influence. Boerhaave was of the former opinion, as well as others of his ſchool: of the latter opinion may be mentioned men reſpectable; among whom are the ſociety inſtituted for the expreſs purpoſe of collecting information relative to Hydrophobia.[d] The origin

[d] Vide Tranſ. of a Soc. for the Improv. of Med. and Chirurg. Knowledge.

origin of the diſeaſe, according to them, is to be traced to infection only, and that to no other ſource need we look for it.

It is true, that in moſt of the inſtances coming under our inſpection, not only in the dog and other animals, but in man, it can be evidently traced to this ſource. The poiſon is directly received from an infected dog, fox,[e] or cat. In tracing this back we ſometimes diſcover them to have received it ſimilarly, and can prove both the time and manner. In examining ſtill farther how that animal may have received it, we diſcover ſome ſtrange dog affected with this complaint, communicating it as he paſſed through the village; and in carrying this reſearch a degree farther, we may be able to find the ſame dog the property of ſome perſon in a diſtant county; for a dog may wander to a great diſtance while under this diſeaſe, in the courſe of three or four days, even after his knowledge of home, and his former connections have deſerted him. At length we come to a ſtand, when we can trace it no farther.

It

[e] Vide Mead, vol. 1. Caſe at Stamford—bite by a fox.

It is now taken for granted, that the ſame mode of communication may have happened to others, as we have already diſcovered, though our inveſtigations can no longer reach it. Here we reſt ſatisfied, and preſume our concluſions to be well founded, becauſe farther information ceaſes. The diſeaſe appearing at all ſeaſons of the year, hot or cold; in the warmeſt climates alſo, as well as in very northern ſituations, become to the inveſtigator a ſtrong proof of the juſtneſs of theſe concluſions. A farther reaſon ſtill adduced is, that certain countries have been exempted from it till it was introduced by infected dogs.

It is difficult, it is unſatisfactory to acquieſce in this mode of reaſoning; nor ought we to conclude, that becauſe we are incapable of tracing the links of the chain up to their origin, and diſcovering the firſt riſe of the malady, or how derived, that the infection muſt have exiſtence, and is only latent in its perfect formed ſtate, in ſome unknown ſituation, till accident brings it into action in the canine ſyſtem; thus inoculating the poiſon into other animal habits, ſpreading it through a country for months together, till all who have been in-

infected either die of the diſeaſe, or are deſtroyed through dread of its future appearance.

It has been aſſerted, that ſome countries remain totally exempt from canine virus. Travellers have made ſuch aſſertions, the only proofs we have of the fact. It has been alſo ſaid, that ſome countries have not experienced it through a lapſe of many years, ſuch as half a century and upwards. The frequency of communication with theſe places, and the periods being ſo recent, afford an opportunity of inquiry into the authenticity of the facts.

Different men ſpeaking of the ſame countries, with good opportunities from their reſidence of knowing, have differed in their aſſertions even here. Thus, when Hilary informs us that in hot climates Hydrophobia is ſo common that it may be called endemial, he is contradicted, and even with ſome warmth, by Moſely,[f] who, from this circumſtance, ſuſpects him of never having ſeen the true diſeaſe. So far from being a common occurrence, he poſitively affirms, that after much inquiry, he found the diſeaſe not to have appeared in ſeveral of the Iſlands, previous

[f] Vide Tropical Diſeaſes.

vious to his reſidence in 1783, for fifty years. In reconciling theſe contradictions by men of character, there is difficulty; both had opportunities of information, and capacities for obſervation.

Moſely however does not ſtand ſingular in what he relates; perſons reſiding in Jamaica, and correſponding with their friends in England,[g] ſo late as the year 1792, not only countenance his opinion, but inſinuate, that previous to the hurricane in this Iſland in 1780, the canine infection had not been known there. No hurricane it ſeems till this, had been experienced for fifty years. In July 1783, the diſeaſe broke out among dogs, and ſpread its ravages till the following March before it was ſuppreſſed. The account ſtates an almoſt annual occurrence of hurricanes ſince that period, and had it mentioned the annual and frequent appearance of the malady in the ſubſequent time, we might be tempted to ſuſpect ſome connection between hurricanes and Hydrophobia.

Whether we believe the diſeaſe to be totally unknown to ſome countries, or otherwiſe, as

g Vide Note to Meaſe on Hydrophobia, by Editor Lond. edit. 1793, p. 54, alſo note, p. 56.

as Ulloa aſſerts to be the caſe in South America; and Proſper Alpinus, and after him Volney, affirm of Syria and Egypt, one thing we can aſſert, without fear of contradiction, that the diſeaſe *does* diſappear among ourſelves for years together, and then unſuſpectedly re-appears without a poſſibility of tracing it back beyond the firſt or ſecond inſtance. The latter afterwards would ſeem to contradict himſelf, by acknowledging a word importing the name of the diſeaſe to be truly Arabic, underived from other languages: this implies the exiſtence of the complaint.

It has ariſen in a dog at a time when no infected animal of the kind was known or heard of in the country, and when the family have never miſſed their dog a ſingle day, nor even many hours together from home. Of the truth of this fact I have ſufficient aſſurance. The butcher's dog at Acle,[h] which communicated the diſeaſe to the lad whom he daily followed was infected in a manner not to be traced to any animal whatever; nor had the diſeaſe, or a dog under it, been heard of in the country round Yarmouth, or within the bounds of the

[h] Vide Appendix.

the animal's, or his maſter's range, for a long ſpace of time before. Now this being aſcertained, and the period of interval between the bite when it is received, and the ſubſequent diſeaſe in the dog being likewiſe well known, had a rabid animal been in the neighbourhood during this ſhort ſpace, ſeldom exceeding 21 days, he muſt have been recogniſed from his ravages, if not actually ſeen by ſome perſons. We cannot ſuppoſe him to paſs through a neighbourhood, a thing ſo unprecedented, without leaving more than one ſolitary mark of his footſteps behind.

If but one inſtance can be well aſcertained of the diſeaſe ariſing without communication with an infected animal, no hypotheſis, howſoever ingeniouſly maintained, will be able to convince us, that a ſimilar diſeaſe may not ariſe under the ſame circumſtances; and that it may not have ſo ariſen from the earlieſt ages in every country where the animal has been propagated. The mode of domeſtication, climate, (local or univerſal to a country) manner of feeding, ſeaſon, and temperature, will ſuffice to reconcile moſt of the contrarieties of opinion reſpecting the exemption of certain countries, totally or periodically, from the

the infection; and will afford ſome clue towards explaining why it has raged at one time and not at another in the ſame places.

If the generation of infection can be proved to take place in our own times, and amongſt ourſelves, and can be referred to the animal itſelf, to his ingeſta, his egeſta, and things connected with his own body, his particular ſituation in all its varieties and circumſtances reſpecting his confinement, weather, drink, food, &c. an end will be put to the cavilling interpretations given to Homer's expreſſion in the eighth, ninth, and thirteenth books of the Iliad.

The different ſentiments entertained of this famous metaphor reſpecting the diſeaſe under conſideration are well known. Here the fury of Hector is compared to the ravages of a mad dog. This is the doubtful word. One party adopts the idea of *rabid*, as intended by the poet, and thence arguing for his knowledge of the diſeaſe, and conſequently for its antiquity. The other party contends, that nothing is meant by the expreſſion farther than rage or ſavageneſs; and that he ſpeaks of a dog only fierce and ſavage, and from his ſtrength

ſtrength deſtructive, inferring from thence the poet's ignorance of the malady.

Pathologiſts have at all times exerciſed themſelves with great ingenuity, in attempting to trace a complaint to its firſt origin. Their labours tended to a laudable end; but much has been often written without arriving at the deſired information. Diſcourſes on the origin of the venereal diſeaſe have occupied volumes, and one nation has imputed the ſcourge as a ſtigma to the other; nor has the grave hiſtorian thought the reſearch unworthy of his pen, or beneath his deciſion.[i]

The ſame obſervation preciſely may be made on the ſmall pox. To what country its firſt origin is to be aſcribed has been the ſubject of equal controverſy. It is indeed true, that certain countries are ſubject to certain diſeaſes, not known in others except by name. The concurring circumſtances neceſſary for their production have not been found in common to give them birth. This does not argue that ſuch may never happen. Elephantiaſis, frequent in the Eaſt, and trichomanes,[k] as frequent in Poland, are not endemial to Great

[i] Vide Robinſon's Hiſt. America. [k] Plica Polonica.

Britain. Again, diſeaſes may exiſt in a country at one time, violent and deſtructive, which in the proceſs of ages become extinct; while on the other hand, new diſorders will ariſe from the different modes of life and cuſtoms, whether vices, luxuries, or both, unknown to the ſame regions in former ages. A very little acquaintance with medical hiſtory will inform us of theſe facts.

Circumſtances even in the ſame country will produce a diſeaſe at one ſeaſon, while at another a concourſe of the ſame cannot meet to give it exiſtence.

There are diſeaſes capable of being propagated in a double way, i. e. by inoculation from a wound directly given, and by abſorption into the ſyſtem, without a wound, of the poiſon in a ſtate of vapour, either through the pores of the ſkin, or by inhalation, or by both. This laſt has been called the *natural way*, to diſtinguiſh it from inoculation. Again, there are other diſeaſes though equally infectious, which infeſt the body, but which cannot be propagated by inoculation.

The meaſles, ſcarlatina, hooping cough, and typhus carcerum are examples of the latter: ſmall

ſmall pox, venereal virus, and Hydrophobia are examples of the former.

Although theſe complaints be extremely diſſimilar in their appearance and mode of attack, it muſt not from thence be haſtily concluded, that their origin, or the firſt principles giving form to the particular infection, are equally diſſimilar. A ſlight variation only in the compound may conſtitute the difference. When a ſet of circumſtances concur to form the one contagion or the other, and when formed favoured alſo by temperature of weather, habit of body of the individual on which it is to act, then will this or that malady, at this or that ſeaſon make its appearance. It may be formed too without always effecting a diſeaſe. A certain ſtate of habit may then exiſt ſufficient to counteract its operation.[k]

Taking this view of the ſubject we ſee how a diſorder may appear, or diſappear at particular times, without having recourſe to a ready-formed fomes, exiſting for two, three, or more thouſands of centuries, and lying hid, as it were, in ſome corner, in its ready-formed ſtate,

[k] Vide vol. 1, p. 46.

ſtate, till occaſion, from time to time, calls forth its action to afflict animal health.

The ſame cauſes which formed it at firſt will form it a ſecond time, and that which gave it birth a ſecond time may equally produce it a third, a fourth, a fifth, and times innumerable.

That this is Nature's mode of operating I am firmly perſuaded: it is ſimple, and conformable to her other laws. By adhering to the opinion of a ſpecific compound lying latent in ſome concealed ſituation till accident, perhaps after a lapſe of years, brings it into action, we ſhall be led into difficulties from whence we cannot eaſily be extricated. Where can that compound lie unſurrounded by other matter, by atmoſpherical air, by heat, perhaps by light, the electrical fluid, nay even the magnetic effluvia, without ſuffering change? Will it be affirmed, that theſe have no action on it; that none of the compound has an affinity with ſome of theſe ſurrounding bodies, whereby it will be chemically decompoſed, and its elementary principles looſened from that particular junction and form, which conſtitutes the ſeeds of a ſpecific diſeaſe?

All

All nature appears in conſtant and continual motion, or in other words, undergoing conſtant and continual changes, though many of them be not only ſlow, but imperceptible to us. One body is in the act of being compoſed at the expence of the compoſition of another. This is the fact, let the name impoſed be what it may. It is evaporation, it is fermentation, it is putrefaction, it is any denomination which you chooſe to affix: it is change of corpuſcles, it is change of place and figure in matter giving it new properties.

If the ſmall pox, the ſcarlatina, the typhus carcerum, or in a word, any contagious diſeaſe ariſe in a particular town or village, according to my idea the ſeeds of the diſeaſe, the infection, has at this very ſeaſon been produced in that individual place, by an accidental concourſe of favouring circumſtances. It ſpreads through a neighbourhood favoured by other concomitant circumſtances, the weather, the individual it has to act on, &c. It ſpreads indeed by contact, which keeps it alive for a longer period than would otherwiſe take place, but at length it diſappears; the circumſtances giving it birth no longer exiſt; objects to act on no longer preſent themſelves, or, their ſyſ-

tems

tems are under ſuch a ſtate as to reſiſt its action, poſſeſſing now an *inſuſceptibility*[l] of being moved by the infection for a time.

Can we, in any equally ſatisfactory manner, explain the appearance of a ſpecific diſeaſe, whether ſmall pox, meaſles, hooping cough, ſcarlatina, or others ariſing in a family inſulated in the country, unexpoſed to ſtrangers, unfrequenting company, nor having connection nor converſation with other parts of the country, nor even with their next neighbours? Yet this fact may be often obſerved.[m]

The ſmall pox will make its appearance in this manner, and has made its appearance in this manner, when the ſtricteſt ſcrutiny could not detect an inſtance of the complaint in a wide extended diſtrict around, and when no individual had approached in contact with the diſeaſe, nor in contact with thoſe near it for a long period.

Admit the variolous fomes to remain undecompoſed on the point of a lancet, corked in a phial, or wrapped in cotton for a twelve-month, nay for two, and even then it is not ſufficient to ſupport a contrary doctrine. The utmoſt limits to

[l] Vide vol. 1, p. 49.

[m] Ibid, p. 47.

to which it can extend capable of propagating the diſeaſe, may not yet have been exactly determined; but limits it has, when it no longer can be called variolous matter. So far the fact is aſcertained, that inoculators have found old variolous matter often to fail; a proof of its having undergone ſome decompoſition.

The very ſame arguments will apply to the other ſpecific infections; they will apply likewiſe to the claſs of infectious fevers; to the plague itſelf. They ariſe with virulence; they continue for a time with ſeverity, ſpreading rapidly; at length they begin to decline, become milder and leſs frequent, and then diſappear. At ſome diſtant time, it may be a year, it may be two, it may be ten, it may be half a century, the infection, by a new and ſimilar concourſe of cauſes, is again formed, and the diſeaſe is again rekindled.

Applying this to the poiſon of Hydrophobia, we need not range to foreign climates, nor have recourſe to diſtant ages for its origin: we may diſcover it in our own country; we may find it in ſome of her cities; we may detect it in the next village, or perhaps in a favourite dog in our own family.

In

In tracing this part of our inquiry more minutely, the mind will be naturally led to the articles of nutriment, their mode of digeſtion and ſolution, with the whole proceſs of chyliſication and converſion into blood and other parts to form the animal ſolids and fluids. We ſhall be led to inquire into the difference of nutriment, its kinds, the condition it is in when taken into the ſtomach, &c. with the influence of atmoſpherical air, and temperature of the weather. This will bring us to an intereſting diſcuſſion reſpecting the ſhare which putrid aliment has in producing the ſeeds of various diſeaſes.

It is notorious in this country, and perhaps in ſeveral others, that the dog is not only fed on carrion, but of carrion in a ſtate of putrefaction, nauſeous to behold, and offenſive to approach. If we add to this his confinement, which is frequent, either in kennels, or in ſmall wooden cages, little more than ſufficient to lie in, for weeks, and ſometimes months together, with a ſtate of the primæ viæ that muſt follow, we may be led to the ſource of great deviations from health.

The diſſolution of animal and vegetable matter, both externally and internally, in living

ing human bodies, is now known to produce the moſt peſtilential diſeaſes experienced on the globe. Theſe may be varied by the difference in the compounds during the proceſs in many ways, far from being as yet all diſcovered, forming modifications and diſeaſe, various and multiplied as the matter from whence they proceed.

In theſe important changes conſtantly going on under certain ſituations, there is room to ſuppoſe, nor is the ſuppoſition improbable, that a compound may take place in the canine habit, either from the air around, which he conſtantly inhales, tainted with poiſonous vapour, or from the putrid matter within his bowels, or in both combined. In the curious and uſeful inveſtigations with reſpect to the origin of nitric acid (ſeptic[n] acid) it has been diſcovered, that it is not only of animal origin, contrary to what has hitherto been believed,[o] but

[n] Vide Beddoes's Conſiderations, part 5. App. paper by Profeſſor Mitchill.

[o] During the preſent war the French chemiſts turned this diſcovery to an uſeful purpoſe in their military operations: for when their nitre failed, they compoſed, by the aſſiſtance of putrefying animal ſubſtances, ſufficient to ſupply the deficiency. The origin of this acid has hitherto

but that it is formed in no other way than from the corruption of animal and vegetable ſubſtances, heaped together in the open air, under certain degrees of heat[p] and moiſture, and likewiſe heaped in the inteſtinal canal, even in living bodies.

The hiſtory of nitre gives much inſight into the manner in which nature compoſes this acid. It is now well aſcertained to be azote[q] (ſepton) and oxygene. When the principles of animal and vegetable matter are examined, they are found to contain theſe two ſubſtances. In the act of putrefaction they are freed from their former combinations, unite together again

therto been referred to the mineral kingdom; but both Boerhaave and Macquer were acquainted with the fact, that its origin was of the animal. Fourcroy afterwards confirmed the ſame.

p A degree of heat from 75 to 80, or 82 of Farenheit's thermometer will be ſufficient.

q To the term azote ſeveral ingenious chemiſts object. Nitrogene appears more appropriated; for the derivation of the word azote referring ſolely to a ſubſtance unable to ſupport life, does not properly diſtinguiſh it. Neither Hydrogene nor carbone can ſupport life. *Septon*, is unobjectionable as far as relates to putrefaction. It would be better perhaps in forming the name, to preſerve the radical. If we ſay *oxygene*, *hydrogene*, why not *nitrogene*?

again by affinity in various proportions, according to circumſtances, forming new bodies of various properties, according to the quantity of the one with the other.

If oxygene be united to its baſe in its greateſt proportion, it is nitric acid; it is a fluid well known in commerce: united with a ſmaller portion it is nitrous acid; with a ſmaller ſtill it is nitrous gas; and with a farther diminution we have that fluid, named by its diſcoverer, Dr. Prieſtley, dephlogiſticated nitrous air, or the gaſeous oxyd of azote (ſepton) ſo ſingular in its property of ſupporting flame; yet at the ſame time ſo deleterious as to deſtroy life the moment it is inſpired.

It is now well known alſo, that unleſs the blood receives a certain portion of oxygene, which is ſupplied by the atmoſphere through the medium of the lungs, neither will ſufficient heat be given to the body, nor will the other parts of the ſyſtem be ſupplied with this vital fluid, in due quantity, to preſerve the balance of health.[r] If, together with atmoſphepheric air, we breath this noxious vapour, this ſpeedily deſtructive compound, we may diſ-

[r] Vide page 98.

diſcover the origin of certain diſeaſes; and, according to the quantity imbibed in a given time, or acting on the habit, will be both their dangerous quality and difference in type.[s]

This poiſonous gas never floats far from its ſource when it happens to be produced from matter corrupting in the open air, becauſe it is heavier than the common air,[t] unleſs driven by a current; and here we find the reaſon why

s It it very difficult to decompoſe the gaſeous oxyd. Hydrogene is the only ſubſtance diſcovered as capable. From Dr. Prieſtley we learn its miſcibility with water. By this means he was able to ſeparate it from nitrous gas when the two were mixed together. The latter would not combine with water, floating unabſorbed above it.

t A cubic foot of azotic gas weighs one ounce, thirty grains and a half: a cubic foot of oxygenous gas one ounce, one dram, and fifty-one grains: a cubic foot of nitrous gas one ounce, two drams, and thirty-nine grains. Theſe were taken when the mercury in Farenheit's thermometer ſtood at 54. 5, and the barometer at 29. 84.

If a combination of the two firſt took place in the proportion of thirty-ſeven of oxygenous to ſixty-three of the azotic, which forms the gaſeous oxyd, the compound would be ſomewhat heavier than atmoſpherical air, the compoſition of which is about twenty-five of the oxygene to about ſeventy-five of azote. Hence the gaſeous oxyd will occupy the loweſt part of the atmoſphere. It will float next the floor of a room, or cloſe by the ground, in a low ſituation, where animal and vegetable matters are undergoing putrefaction.

ſome of our moſt infectious diſeaſes begin in one part of a ſtreet or alley, or ſometimes from a ſingle family, among the poor with bad accommodations, or dwelling in filth, and from theſe places ſpread their ravages, by contact, far and wide.

If, while this poiſon be breathed, it is at the ſame time generated within the body, ſtill more rapidly deoxygenating the blood, a proper portion of carbone not being carried off, maladies of a ſtill more ſpeedy fatality muſt enſue. The body is attacked at once, both from within and from without; nay even from the ſurface of the ſkin partly imbibing it: nor is it poſſible, under theſe united powers invading on all ſides, for any time to ſtand the conflict.

Viewing the ſubject of general infection in this light, its importance is truly great; but it points to its own removal, happily leaving the mind more at eaſe by its being able to diſcover an eaſy method of eſcaping ſo dreadful a ſcourge. This, in one word, as far as it reſpects man, may be referred to *cleanlineſs*, and the method of living which we purſue in regard to our diet, and other things appertaining to it, all of which may be comprehended by the term

term temperance: and as far as relates to our domeſtic animals, bred for convenience, eſpecially the dog, and perhaps the cat, as being fleſh eaters, to the manner in which we ſupply them with nutriment, to the lodgements provided for them, the exerciſe given them, with things of this nature conducing in general to animal health.

I conjoin the cat here, but I do with doubt, becauſe as far as my information reaches ſhe rejects putrid fleſh, nightly prowling for her prey, when at liberty, which ſhe devours freſh; and theſe being generally vermin, or ſmall birds, which ſhe finiſhes at a meal, never, that I have yet diſcovered, returning a ſecond time to feed on the remains of her laſt repaſt. Not ſo the dog; he loves carrion, or fleſh in a ſtate of putridity; is conducted to it by the quickneſs of his ſmell, even to a great diſtance.

Another reaſon I would offer for exempting the cat is, her well-known propenſity to cleanlineſs. She cannot bear even the ſmalleſt ſpeck of filth for any time upon her body. By the aſſiſtance of her paw, wetted with her ſaliva, ſhe bruſhes and ſmooths her ſilken fur. She likewiſe, for the moſt part, rejects vegetable

table diet. Milk ſhe is fond of, but it is an animal production, and partly at leaſt anima liſed. Her food therefore being more purely animal, eaten while recent, is the leſs apt from the want of the acidifying principle ſup plied by vegetables, to give birth to the poi ſonous gas; for the azote, which may be evolved in the inteſtines is a harmleſs vapou paſſing off by natural outlets, except as far a it meets with oxygene, to render it active and poiſonous, which will be proportioned to the degree of its under-oxydation.

To this I would add, that there is but one example, at leaſt known to me from books, o any of the cat genus, a numerous tribe, where it is affirmed, that they were diſcovered rabic in their wild ſtate by the diſeaſe being ſponta neouſly generated.[u] This is of the leopard, and the aſſertion appears to come to us under very ſuſpicious circumſtances. It is Cœlius Aurelianus who has communicated the obſeration; and it is more than probable, when we reflect how ſeldom perſons return with life, after venturing

[u] By ſpontaneous I mean here without inoculation. It is totally diſtinct from what is to be underſtood by ſpontaneous Hydrophobia, as delivered in vol. 1, p. 249.

venturing ſo near theſe animals as to afford an opportunity of obſervation, that this author took it up on no better grounds than the idle tale of vulgar report. The cat then, I would almoſt venture to ſay, never experiences the diſeaſe produced ſpontaneouſly, but derives it, like many other animals, from the virus inſerted by a wound.

The natural habits of the canine tribe do not lead them to the removal of filth from their bodies; and we have ſeen how great their propenſity is to devour corrupted fleſh. They are at the ſame time vegetable eaters, at leaſt in their domeſtic ſtate, a thing well known to every houſekeeper and dog feeder. They even eat vegetables occaſionally in their raw ſtate; I ſpeak of graſs; but this it may be ſaid nature leads them to, as a preventive, not a provoker of diſeaſe: for they are obſerved, while labouring under cholic, and other bowel complaints, to betake themſelves greedily to the eating of graſs, and generally in ſuch quantities as to prove purgative, wiping thereby the ſordes from their bowels along with the poiſonous feculencies contained in them.

Let me obſerve, that coſtiveneſs itſelf, eſpecially if accompanied with the free uſe of animal

mal food, whether here or in the human race, as it favours the production of the gaſeous oxyd, is detrimental and highly dangerous. Animal aliment is conducive to this habit of body. Dogs are ſeldom obſerved to be otherwiſe, unleſs it be obviated by attention in their keepers to their diet, or by the operation of laxative medicines. If they are ſuffered to prowl at large, conſuming as they meet it the corrupting ſordes from every dunghill, the frequent lot of the poor man's cur, coſtiveneſs, for the moſt part, is the conſequence.

If they are chained in the cage, perhaps for months together without exerciſe or motion from the door of their contracted lodge, farther than a few yards, and at the ſame time well fed with animal offal, the ſame muſt follow: if in the more ſpacious kennel the pack be confined to horſe fleſh and other carrion, without a proper portion of laxative food, the ſame will take place, and perhaps in a higher degree from its greater putreſcency. This however may not often be the caſe, from the greater attention gentlemen now pay to the diet of their packs by the addition of plenty of milk and barley-meal pottage; but I ſpeak of its poſſibility.

If to this be added the inconvenience ariſing from an improperly conſtructed kennel, too ſmall for the lodgement of from fifty to ſixty dogs; too low alſo in its roof to contain a portion of air to ſuſtain healthy reſpiration for any time, and along with this ſo incommodiouſly and imperfectly ventilated, that a quantity of the vapour which they expire, loaded with noxious particles, is always kept floating around them, (the removal of their fœces being likewiſe neglected) we ſhall immediately perceive an additional ſource whence deviations from health may draw their origin, which, though ſlowly and imperceptibly acting, are not leſs dangerous, and may prediſpoſe the body to different diſeaſes, according to conſtitution, in which the dog differs equally with man.

If the other concurring cauſes juſt enumerated exiſt likewiſe, we ſee an united force which may ſhow its effects on one animal different from what it does on another, either from a difference in the degree of the poiſon generated, or in a weaker organ ſuffering more. We ſhall now have a variety in diſeaſe appearing in one animal; or we may even have a diſeaſe from which the reſt at the time ſeem totally exempt.

It

It has been denied by ſome, that neither high feeding, nor carrion, becauſe it is naturally ſought by the animal, influences the dog's health; but reaſoning as we have done, and examining the materials he devours, we find the ſeeds of diſeaſe in plenty. Theſe principles are pent in by coſtiveneſs, the natural conſequences of ſuch diet. They collect and augment in quantity, become mixed and compounded into a variety of new forms; and accelerated by the heat in which they are placed, and the remora which they meet, a gaſeous fluid, highly poiſonous and deleterious to the animal itſelf, muſt be the product. This mode of reaſoning indeed is not allowed to reſt merely on hypotheſis; but fact confirms the real exiſtence of what is here alledged.

The very diet of which we are ſpeaking is proved to have given birth to the diſeaſe under our review; I mean rabid infection. An example is given by Dr. Meaſe[w] in the following words: "We had a remarkable proof of the influence of carrion eaten by dogs, in ſetting them mad ſome years ſince, in this city.[x]

At

[w] Vide Eſſay on Bite of Mad Dog, p. 85, edit. Lond. 1793.

[x] Philadelphia.

At the concluſion of the late war, and before that period, all the horſes and other animals that died in the city were carried out to the commons, and ſuffered to putrify there; and it is *well known*, that at this period madneſs was a moſt common diſeaſe among dogs, who uſed conſtantly to devour this carrion: but of late it more rarely occurs among them, ſince the former practiſe is not any longer ſuffered." The ſhort period intervening between the time this took place and the publication of the account, together with Dr. Meaſe's proximity to the ſource of information, muſt remove all ſuſpicion of an hear-ſay tranſaction.

Here are two cauſes concurring, the putridity of the fleſh, and the quantity devoured. While plenty of food ſo much to this animal's taſte exiſted, it will be readily believed, that he would neither be ſparing in his repaſt, nor remiſs in the frequency of his returns to the ſame table, having no impediment to obſtruct him. The heat of the weather is not mentioned, neither is the ſeaſon of the year. But this omiſſion is not material; for though weather and climate might concur in evolving and combining a poiſonous gas, from the known circumſtances of putrefactive fermentation,

tion, yet the animal had, independently within himſelf heat, and every circumſtance ſufficient for the production of the deleterious matter, as we have already ſeen. Nay, from the entrails of theſe animals, (horſes) vegetable eaters, affording in plenty the principles compoſing it, he might receive it ready formed and concentrated in quantity, not only into the ſtomach in the act of deglutition, involved and mixed with his ſaliva, but into the lungs through the noſtrils, in the act of inſpiration, communicating it by this medium immediately to the ſyſtem. This I apprehend is not to be controverted.

What the preciſe matter giving riſe to rabies in the dog may be is not eaſily to be determined; but that it is ſome condition of azotic oxydation is, I think, not only rendered probable, but almoſt certain. Even various degrees of this proceſs may excite the complaint in different animals, as it will exert itſelf according to the difference of ſtrength[v] in the fibre with different effect.

If this reaſoning be applicable to the dog, it will be even more ſtrongly applicable to the

[v] By this term I mean its particular formation.

the fox and the wolf, when their mode of exiſtence is taken into conſideration. Their lurking in dens ill ventilated, and, for the moſt part, dirty, where this noxious vapour muſt be generated, their untimely meals, being now hungered, now gorged with their caſual prey, which in like manner muſt favour its generation within them, may be a cauſe altogether adequate to the effects perceived. Hence ſo frequent madneſs diſcoverable among wolves in the countries where they abound, and which is ſo ſeverely experienced by their ravages.

From the nitrous oxyd to the gaſeous there are ſeveral ſhades,[z] and there may ſtill be more, which the reſearches of the chemiſt have yet to diſcover. It is probable that we ought to look here for the different effects diſſection points out on different organs of the animal dying from the influence of this malady. It may account in ſome meaſure for Morgagni's declaration; and indeed from what every diſſection proves, that the diſeaſe is ſo various and diſſimilar to itſelf, that no two diſſections are alike. It may afford ſome explanation to the puzzling phœnomena of ruptured parts; it may

[z] Vide Beddoes's Conſiderations, part 5, paper by Profeſſor Mitchill.

may explain the ſmall, numerous, and irregular points and abraſions, even ſometimes ulcers, impoſthumes, and eryſipelatous gangrene ſpreading through the ſtomach and part of the œſophagus, with mortified ſpots, now and then found on the diaphragm and liver, ariſing from Hydrophobia. Some deviation in the proportions of the compound, ſome fortuitous circumſtances reſpecting the individual acted on, may form the variation, and ſerve to elucidate the nature of theſe appearances.

It is admitted, that a certain condition of the air, the ſeaſon and climate favouring this ſtate, may be accidental and concurring cauſes, giving exiſtence to this infection, as well as to infection in general. How far however a ſtate of the atmoſphere can of itſelf produce rabies may be doubtful.

Moſely has aſſerted without heſitation, that the circumambient atmoſphere can, without other auxiliaries, produce the complaint; and deſcribes ſuch an occurrence having taken place in the Weſt Indies, in 1783.[a] At this time

[a] He doubts if the diſeaſe was *ever ſeen* at Jamaica, at leaſt before this year. Dr. James, on the authority of Col. Martin, affirms it never to have been known in the iſland of Antigua.

time it was general; and ſeveral people periſhed by it in Jamaica, beſides horſes, hogs, goats, and other domeſtic animals. He particularly ſpecifies dogs being ſeized with it who had no communication with each other.

According to the idea I have given of infection this I can readily believe may have happened; and the fact, thus authenticated, eſtabliſhes the foregoing opinion, that it is not neceſſary to have recourſe to antiquity, to foreign climates, in ſearch of its origin; or endeavour, by ſuppoſitions or quotations from the works of credulous travellers, to prove its importation into theſe, or into any particular country. On this ground I admit its ſpontaneous generation, without the intervention of inoculation by a rabid dog.

Moſely ſtretches his idea ſomewhat farther, giving a quality to the air, not locally conſidered, but in a general and extended ſenſe, ſufficient to give it birth. He illuſtrates it with this fact: "Some dogs that were brought from Europe and North America, and that were *not on ſhore*, went mad on their arrival in the harbours in the iſlands."[b] It is difficult with

[b] Vide Trop. Diſeaſes, p. 31.

with me to acquieſce altogether in the notion of the atmoſphere of a whole iſland, or even of a conſiderable diſtrict being ſo loaded with a particular poiſon, ſo far vitiating it as to produce rabies in dogs, whether belonging to the iſland, or thoſe newly imported. I am inclined to think, that a ſtate of the air ſo tainted muſt have had evident effects of ſome kind or other on animal health in general, particularly the biped and quadruped.

The quadrupeds mentioned to have ſuffered received it by canine inoculation; they are therefore out of the queſtion; the atmoſphere is not conſidered as co-operating in them. No epidemic malady is at this time ſpoken of in the country, either among the human or brute ſpecies. Yet no wide-ſpreading epidemic, I believe, is recorded, in which the atmoſphere is preſumed to be pregnant with the matter producing it, where we do not find conſiderable deviations from health among the domeſtic quadrupeds.

They may not indeed have the particular kind of diſeaſe then raging, occaſioned doubtleſs by their particular organization; but they have diſeaſe, and ſometimes attended with ſpeedy fatality. The different hiſtories of the

plague

plague evince this. Cats, dogs, horſes, mules, and animals in general domeſticating in infected houſes, or remaining in the ſtreets, whether ſuch as are employed in labour or otherwiſe, breathing an air replete with the poiſon, were always obſerved to be leſs or more under a ſtate of illneſs.

In the wide-ſpreading influenza in ſpring 1782, I can aſſert, from my own obſervations, horſes, dogs, and ſheep to have been manifeſtly affected.[c] Preceding the appearance of the yellow fever in Philadelphia, in 1793, various diſeaſes, which ſeemed to have ſome connections with the ſtate of the atmoſphere, were common in the city.[d] I would not go the length of denying, that the air might not have ſome affinity to the propagation of canine madneſs in Jamaica at that time; nor would I deny, that a combination of the principles of gaſeous oxyd, which I preſume to be nearly connected with this malady, might not take place by aërial commixion, independent of fermentation in animal and vegetable matter within the bowels of living or dead animals, or of collec-

c Vide Reg. Surg. vol. 2, edit. 2. Account of Influenza.

d Vide Ruſh on Yellow Fever, 1793.

collections of fermenting matter in houſes, ſtreets, or other places favourable to the proceſs. The thing is poſſible.

In the great aërial magazine are both azote and oxygene. The atmoſphere is compoſed of it; and it is poſſible ſometimes to be in a diſengaged ſtate; amidſt the conſtant motion of particles ariſing from the earth, and in the floating vapours, new combinations of thoſe principles may take place, but it would appear that they muſt be in a diluted form.[e]

I will admit a long continuance of its action even thus diluted and unconcentrated, to avail in diſpoſing the body to ſome ſpecies of diſeaſe;

e Certain combinations in the atmoſphere inſtantaneouſly fatal to animal life, and in maſſes of great extent, do really happen in nature. The Eaſt Indian land-wind may be brought as an example. Of its preciſe nature and component parts no hiſtory, as far as I know, has yet been afforded. It cannot be approached but at the hazard of life.

In July 1796, ſays an account (Vide Star for February 1797) from the Eaſt Indies, this peſtiferous wind deſtroyed fifteen unfortunate natives travelling at the time. The ominous blaſt overtook them; experience had taught them its baneful effects. They ran under the ſhade of ſome trees for ſhelter till the guſt ſhould blow over, in hopes to avoid it, but in vain; they were all found dead, parched, and dried by this dreadful wind. To what is it owing? What chemical admixture forms this product, and from what laboratory does it proceed?

diſeaſe; but that dogs tranſported either from North America or from Europe, uninfected when they left thoſe places, ſhould be all at once ſeized on their entrance into the Weſt Indies, even during the prevalence of the diſeaſe in the country, and eſpecially in the neighbourhood of theſe parts, without communication with the land, is not eaſy to be explained.

If Dr. Moſely knew this to be a fact, which ought to be admitted as indiſputable, I ſhould rather be inclined to look for the infection from another ſource, at leaſt not leſs improbable, either that it was generated within the brute, from the ſpecies of aliment on which he fed during the voyage, or before it; the bad air that he might have breathed, confined below in the ſhip, with the concommitant circumſtances of ſcanty, and even impure water; or from infection actually received before the voyage commenced.

I would not reſt it however on this laſt, unleſs it could be ſhown that the voyage was ſhort of a month. I would not reſt it here on another conſideration, for though one veſſel might bring from home an infected dog, it would be a ſtrange and uncommon concurrence of circumſtances, to find different ſhips from different

coun-

countries, bringing with them alſo inoculated animals, and all meeting at one anchorage in a harbour at Jamaica, where, on breathing the air off the land, tainted with an infection which had produced it on ſhore, they ſhould all take it nearly together. This is an improbability inſtantly to be abandoned.

Long and loud accuſations have been brought againſt water aiding ſome proceſs generating the infection, from the earlieſt writers to the lateſt who have reaſoned on the nature of canine madneſs. It is impoſſible to ſuppoſe ſo many writers, unconnected with each other, to make this obſervation without having ſome foundation to reſt on. Circumſtances leading to this concluſion muſt have appeared to them before it could be adopted. We cannot therefore conſider it altogether in the light of a vague report. I ſhall admit it to have a connection with the *ſpontaneous*, or underived and uninoculated diſeaſe.

The notion indeed of this connection is ſo prevalent in ſome places, as to engage the attention of magiſtracy. The author juſt quoted, and who, I think, travelled into Italy, and made ſome ſtay at Venice, relates, that in this city there is a law obliging ſome deſcriptions of work-

workmen (handycraft) to preſerve near the doors of their workſhops ſmall troughs or baſons of water, that dogs running paſt may ſatiate their thirſt when urgent; and thus the canine diſeaſe, of which they conſider the want of water as one of the remote cauſes, be prevented. In Venice are no ſtreams in the ſtreets, nor reſervoirs of water from which the dogs running about can be ſupplied when thirſty.

It is a fact ſufficiently notorious, that without frequent ſupplies of this fluid, the due balance of health will be loſt. Our own feelings daily tell us this. The diſtreſs occaſioned by the want of water is ſtill more forcibly exemplified by the narrations of mariners ſhipwrecked at great diſtance from land.[f] Applying this to the dog accidentally placed out of the reach of water for ſeveral weeks, united to a hot ſeaſon and dry atmoſphere, with full animal food, perhaps putrid carrion, an alteration can eaſily be conceived to take place in his fluids, favourable with other cauſes, hitherto mentioned, for the production of diſeaſe.

[f] Vide Bligh's Narrative, and others.

caſe.g This may be fever, it may be rabies, according to ſome alteration or change in the degree of the poiſon generated, in the oxydation of the azote, or from the ſubtraction of vital fluid from the blood, or the detention of too large a portion of carbone.

I believe it is now generally admitted, that water is decompoſed in the ſtomach and inteſtinal canal, uniting with the ſubſtances it meets there; and according to the laws of affinity, forming new compounds. In this way water may have effect in preventing the production of the deleterious vapour. Its oxygene will ſupply the deficiency of this principle in the habit: its hydrogene will unite with the ſuperabundant carbone and ſebacic acid in the formation of oil, or fat, another neceſſary compound, whereby leſs opportunities will be given to the generation of poiſons. But ſhould we ſuppoſe it only in the light of a ſimple diluting fluid, without ſuffering decompoſition, even then it will have its uſe: for it has been found

g Water is always imbibed from the atmoſphere thro' the cuticular pores, whence the abſorbents carry it to the blood; but the cuticle of dogs, as we ſhall hereafter ſee, is not favourable towards this proceſs, from the minuteneſs and paucity of its pores.

found by experiment,[h] that though the gaſeous oxyd could not be decompounded either by ſulphur or cauſtic fixed alkali, yet it readily mixed with water.[i] Now, in this ſtate the oxyd may be carried off by the different excretions, leaving the animal unhurt. In this way ſome explanation may be attempted of the uſefulneſs of water in the prevention of canine rabies.

If want of water and the preſence of heat have been equally conſidered as favourable for engendering this malady, great degrees of cold have been no leſs a preſumed cauſe in giving it exiſtence. It may not be eaſy to explain, why two conditions ſo oppoſite to each other ſhall be followed with preciſely the ſame effect; yet that rabies has ariſen under great degrees of cold is an obſervation as ancient, I believe, as the other remote cauſes juſt enumerated.

Ætius teſtifies to this truth.[k] It had appeared, he affirms, not only where the greateſt heat prevails, but likewiſe where the *rigours of*

[h] Vide Beddoes's Conſiderations, part 5. App. paper by Profeſſor Mitchill.

[i] Vide p. 172, note. [k] Lib. vi. cap. 24.

of winter were felt in the extreme. Inſtances of the ſame have occurred in our own, and doubtleſs in all times. Every obſerver in the courſe of his life has had opportunities of verifying the fact from ocular teſtimony. I have witneſſed it in more than one ſeaſon. Meaſe has ſeen ſeveral inſtances of it in the city of Philadelphia. The great winter colds occaſionally taking place there, are well known to be attended with rigour, and duration unexperienced, at leaſt ſeldom known in England. In ſome of the ſevereſt ſeaſons felt in that country, dogs went mad. "This was particularly the caſe in that of the years 1779-80, when more of thoſe animals periſhed by the diſeaſe than for a long time before."[1] The ſame has been obſerved in Maryland, where in theſe rigorous winters even a greater number periſhed than at Philadelphia. The caſes annexed to this treatiſe will prove how often it occurs in the winter ſeaſon.

On the 25th of Dec. 1796, the coldeſt perhaps ever felt in this country, a child near Bath was ſaid to have died hydrophobic, bitten about a month before. I can enumerate within

[1] Vide Meaſe on Bite of Mad Dog.

my remembrance three inſtances of its prevalence in winter. What connection has cold with this diſeaſe? What ſhare has it in its production?

That cold is inſtrumental in producing other diſeaſes we well know; but if exiſting only to a certain degree, it is likewiſe powerful in meliorating ſome, and in deſtroying altogether the ſeeds of others. It is an opinion almoſt univerſally entertained by every deſcription of men, phyſicians not excepted, that froſty weather meliorates health. Nor is it an uncommon thing on the ſetting in of froſt, eſpecially after the autumn, to hear people congratulate each other on it.

Experience, to a certain degree, muſt have ſanctioned the opinion, otherwiſe an error that every man's feelings told him exiſted would have been abandoned. The roſy look, the florid complexion, the brilliant eye, the brightened countenance, and firmer walk in every paſſenger you meet, in every friend with whom you converſe, and every company wherein you mingle, ſtamp with validity the common opinion. Aſk the valetudinarian of his health, he anſwers briſkly, the froſty weather has cured him. Make the ſame enquiry of a nervous lady,

lady, reſpecting thoſe achs and pains on which her mind is ſo intent, that they make part almoſt of every converſation with which ſhe entertains her viſitors, ſhe will anſwer much in the ſame manner. Her ſleep is more refreſhing, tinnitus aurium gone, her head-ach is fled, her appetite, lately ſo delicate and faſtidious, is already mended, and ſhe not only bears motion commodiouſly, but is even refreſhed after the exerciſe of walking, which but a few mornings before ſhe was unable to undertake, or if attempted, her enfeebled muſcles were unequal to the taſk.

There is no medical man whom this obſervation can have eſcaped. Among my friends of both ſexes, whom I meet in the common intercourſe of company are, as muſt happen to every man, valetudinarians of various degrees in the derangement of their health.

In the great viciſſitudes of weather, from the firſt day of Dec. 1796 to the ſucceeding April, opportunities were afforded me of inquiring more minutely into the connection between the weather and this ſtate of body. I turned my attention more eſpecially to this ſubject from peruſing a paper by Dr. Heberden, on the compariſon between froſty and mild winters

ters in reſpect to health and fatality.[m] In the firſt days of froſt the melioration of health in my friends of this deſcription perfectly coincided with common opinion.

In one lady, aged 36, occaſionally my patient for more than five years, with complaints generally comprehended under the term *nervous*, and with theſe a tendency to debility in the pulmonary ſyſtem, and irritability in the mucous membrane of the trachea, the amendment was remarkable.

On the 24th of December, about eight in the evening, when the mercury in the thermometer had ſuddenly ſunk to 15° ſhe expreſſed herſelf to have felt more light and cheerful throughout this day than for ſome weeks before. Since morning ſhe had been much in the open air at different times; and on giving this narration added, her tickling cough, a troubleſome companion for ſome time paſt, had this day ceaſed to give her uneaſineſs.

Another lady, aged about 30, ſubject to *nervous* head-achs, declared herſelf to be totally free from them, a happineſs ſhe had not experienced

[m] Vide Phil. Tranſ. part 2, for 1796.

rienced for a conſiderable time. This inquiry was farther confirmed afterwards during the ſucceſſion of thaws and froſts happening two or three times before the froſt totally diſappeared, by ſimilar anſwers from other valetudinarians of both ſexes. A thaw conſtantly renewed their complaints, brought back their coughs, their dyſpneas, their inquietudes and loſs of ſpirits, while the returning froſt as conſtantly removed them. But this had its limits. It was curious, and not unimportant to mark them.

When the froſt had continued uninterrupted for ſome time the condition in all was changed; in ſome very materially. The long-continued action of dry and cold air began to ſhow effects unfavourable to the ſyſtem. The doſe, as it were, became too large; abſolute heat was conveyed to the habit in too great abundance; the blood, as it would ſeem, was hyper-oxygenated, and the heart, with the arterial ſyſtem, was excited to too great exertions, and a train of inflammatory complaints ſucceeded, to ſeveral dangerous, and to many, eſpecially the aged and infirm, fatal.

Theſe were manifeſted in the forms of rheumatiſm, gout, pneumonic and catarrhal inflamma-

flammations, ſcarlatina, ſmall pox among children, aſthmas recurring with renewed violence and long paroxyſms, apoplexies and palſies among the elderly; and theſe, with other diſeaſes, varied according to the conſtitution of the individual.

An elderly lady nearly loſt the uſe of ſpeech for ſome weeks, by expoſing herſelf for about an hour in the open air in her garden.

An unmarried lady, about 40, a valetudinarian, and what is generally termed of leucophlegmatic temperament, after the continuance of the froſt for ſome time, ſuffered an hemiplegia from which ſhe did not, for many months, recover ſtrength to walk, nor perhaps will, for the reſt of her life, experience the free uſe of her limbs.

An ulcer of the leg to which a lady of 75 had been ſubject for ſeveral years, but which had been perfectly cicatriſed for ſome months, broke out anew, as happens to patients under ſcorbutus.

Opthalmias were extremely troubleſome and extremely ſevere, eſpecially among coachmen driving the public coaches, and expoſed thro' the night to the cold; among waggoners and carters daily engaged in the ſtreets, or about

the

the quays. Scrophulous ſwellings were not leſs frequent.

Chapping of the face and hands, and bliſters about the mouth and noſe, were the lot of ſome. A perſon informed me, after being engaged in the open air ſome hours on one of the ſevereſt days, that his lips ſwelled, his noſtrils were excoriated, and in drawing in the frozen air, a pain in the forehead (in the courſe of the frontal ſinuſes) ſtruck him inſtantaneouſly, and was renewed in each inſpiration, as if a number of pins were at once pricking the parts. A continued day of this ſeverity, had he been forced to have remained in the open air, he believed would, to him, have proved fatal. At this time his fauces became hot, dry, and parched, and his voice hoarſe and thickened.

A ſurgeon here informed me of his having ſome febrile caſes then under his care, which were undoubtedly of the typhus kind, and even put on marks of putridity. The ſame ſpecies of fever broke out in another family, where I was a frequent viſitor; but it was ſome time previous to the commencement of the froſt. It appeared firſt in a female ſervant; we knew not how ſhe caught it. It

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ſeemed indeed not to have been caught by contagion, but produced in conſequence of a ſtate of long previous debility. She had no communication whatever with ſick perſons, nor with others out of the family.[n] A train of debilitating ſymptoms ſucceeded in the form of loſs of appetite, pain in the ſtomach, nauſea in the morning, wearineſs and weakneſs all over the body. This was early in September; ſhe applied for advice at this time, and her complaints being conſidered as dyſpeptic, the uſual remedies were ordered, bark, bitters, ſteel, &c. Six weeks under theſe medicines produced no amendment; on the contrary ſhe was evidently worſe, though all this time ſhe continued her daily work. Unable longer to hold out, ſhe took to her bed with all the ſymptoms characterizing typhus. At the end of ſome weeks, on her convaleſcence, the footman was attacked, and his life, for ſome time, was in imminent danger. The weather was now cold. The diſeaſe was evidently contagious, as he muſt have received it fro-

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n The daily work in which ſhe was engaged as beyond her ſtrength; but a deſire to retain her pl-e urged her to a continuance of her exertions.

her. The nurſe likewiſe fell ill after the commencement of the ſevere froſt.

Dr. J. Hunter likewiſe confirms the appearance of putrid and infectious diſeaſes occurring in the midſt of winter, and in the coldeſt ſeaſons.[o] Nay, he thinks them more apt to ariſe in the cold than in the hot, becauſe in the latter people live, as it were, in the open air (he is ſpeaking of tropical regions) and experience the benefit of free perflation: in the former the poor, eſpecially thoſe living in ſmall apartments, and in other reſpects ill accommodated, ſhut cloſe their doors, and every crevice where air can enter, in order more effectually to exclude the cold. They live thus in a ſort of vapour bath, or like an animal under a bell, from which if the air is continued to be excluded death, in a ſhort time, muſt follow: but if a ſmall portion be admitted the creature may continue to live, though not long in health.

In theſe caſes, it would ſeem, a poiſon is generated ſomething in the manner already explained, part of which may be attributed to internal cauſes at the ſame time operating with the

[o] Vide Med. Tranſ. vol. 3, p. 345, et. ſequent.

the external. The above author attributes the infection principally to the excluſion of the free air.

On the whole, from theſe proofs of the generation of infectious diſeaſes in cold ſeaſons, and from the compariſon of the deaths within the bills of mortality in London, in Jan. 1795, (a month of ſevere weather, as were the two ſucceeding months) with January 1796, as remarkable for mildneſs of temperature, as the preceding for rigour, the concluſion drawn by Dr. Heberden of the healthineſs of mild ſeaſons over the cold and rigorous, will be found juſt, though the variation will be greater proportionally in the ſcale of fatality in great cities than in the country. This will ariſe from obvious cauſes, one of which doubtleſs will be the change of temperature daily alternating during the froſty weather, occaſioned by the heat from the multiplicity of fires, united to the ſun-beams during the day, producing a thaw, and the abſence of the ſun, and the extinction of the fires during part of the night, cauſing congelation.

If we apply to the dog what we ſee happen, that a poiſon may be produced, and is produced in the coldeſt weather, of a putrid tendency,

dency, highly fatal to the human ſpecies, a ſimilar poiſon, under circumſtances to which the animal may be ſubjected in rigorous weather, may be in them alſo generated, and is, I think, occaſionally generated, capable of producing rabies.

I am now in poſſeſſion of a number of facts collected for ſome time paſt, reſpecting the production of infectious fevers, generated by a concurrence of internal cauſes, without any communication with perſons under ſimilar diſeaſes. Theſe happened both in hot and cold ſeaſons. A train of ſymptoms always preceded, marking no ſpecific complaint, but which might be denominated general debility; and from their long ſtanding, ſometimes for months, might be termed chronic. No organic leſion whatever, on the minuteſt examination, could be diſcovered. A quickened pulſe, with reſtleſs and unrefreſhing nights, indicating great irritation over the ſyſtem, waſted the habit, and confirmed the weakneſs, till at length a true infectious fever ſucceeded, diſplaying in its progreſs the genuine marks of typhus carcerum.

Debility is the conſequence of long expoſure to great cold. This is within common obſer-

obſervation. It is ſeen in a ſcale from ſlight numbneſs gradually aſcending up to the froſt-bitten foot, and mortified limb. Dogs ſuffer its effects proportionally to their nature with other animals. It is not neceſſary here to trace the links of the chain in this operation. To prove its exiſtence is all we want. Under certain degrees of cold the functions of the animal are diſturbed. The diet may concur in deranging the ſyſtem; the fluids cannot then continue in their healthy proportions with reſpect to their component parts; and there is the poſſibility, in this way, of a proceſs internally going on favourable to the production of the gaſeous oxyd, which has been preſumed, under certain circumſtances, and applied to certain parts, to give riſe to Hydrophobia.

We have not, I preſume, been minute enough, or ſufficiently careful in obſerving the manner in which dogs are often lodged and fed (if lodged at all) amongſt many of the poor in rigorous ſeaſons. Their maſters often cannot feed themſelves and families, and their dogs muſt fare in proportion. If we had examined into theſe circumſtances the fact would not have been denied as impoſſible, that

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ſpontaneous rabies could not ariſe from natural cauſes, either in cold ſeaſons or in hot, in ſummer or in winter: we would not have referred it ſolely to inoculation, nor have affirmed, the ſeeds of it to be conſtantly lurking among us, produced for the firſt time, we know not how, about the days of Ariſtotle, ever ſince continuing in exiſtence by contact or bite.

In aſſenting to this doctrine we ſhould be involved in the ſame difficulties pointed out in our illuſtrations reſpecting variolous and other ſpecific infections;[p] or we muſt admit, that in a country where this malady has once appeared, one or more dogs muſt conſtantly be under its influence.

To illuſtrate this, let us for inſtance ſuppoſe a dog raging under it in the eaſt, who communicates it to others in the ſame, or ſome other county, where, by a ſimilar communication, it reaches the weſt, turns to the north, ſweeps back again, after a lapſe of ſome time, or extends itſelf towards the ſouth. Still kept in being, it diſperſes to a different diſtrict by the ramblings of an animal under it; then by an

[p] Vide page 164.

an equal accidental movement reverts again to the eaſt, from whence it ſet out, ready to take a new courſe, and run the ſame wanderings over the ſame or other parts of the country not before viſited; and thus, without ceaſing, from generation to generation, from century to century, we have a rotine, conſtant as the perpetual motion, of one mad animal biting another; an abſurdity that would rather excite a ſmile than ſeem to call for a ſerious refutation.

If ſuch really were the fact we ſhould have long ſince been ſupplied with an eſtabliſhed hiſtory of it; nor would it have been left to conjecture to determine the manner in which the diſeaſe was propagated, becauſe all muſt aſſent to what every one knew.

Surely it might be ſuppoſed, that in this zig-zag ſucceſſive movement of the malady, though it might continue uninterrupted for ſome time, whether months or years, yet it might ſo happen, that every animal under it might ſuffer death without leaving the ſeeds of infection behind them. It is a poſſible event, nay I would affirm it frequently to happen. The link is now broken; the diſeaſe needs no longer to be dreaded; it is extinct.

Accord-

According to this doctrine it cannot be revived except by the ſame means as at firſt; a fortuitous combination in certain particles of matter having ſome connection with the canine habit. Granting it to be thus formed, a repetition of the ſame cannot be denied: and thus the diſeaſe may altogether ceaſe for a time, then for a time be rekindled; ceaſe again, and again be regenerated, according to exiſting circumſtances, whether it be under the influence of a ſcorching ſummer, or the rigours of winter with intenſe froſt; whether in regions under the line, or in very northern latitudes.[q]

This is exactly what I contend for, what it will be difficult to refute, and, as far as my inveſtigation can proceed, what ſeems to be Nature's law.

Examining it thus as a poiſon, capable of being formed at all ſeaſons, and in every climate, where all the circumſtances unite to effect this proceſs (though leſs rare in ſome climates and ſeaſons than in others, and in ſome

[q] It is not a frequent diſeaſe in Sweden. (vide Swediſh Tranſactions for 1777) The climate of Sweden may be called cold rather than temperate; yet ſince it does appear, though it be but ſeldom, it eſtabliſhes the fact, that cold climates are not exempt from rabies.

ſome perhaps never, from the manner of breeding and feeding this animal) I can give credit to the fact which Dr. James relates of kennels retaining the infection for a certain time after all the infected dogs were deſtroyed, but not to the length that he affirms, viz. after waſhing, ſcraping, and fumigating the walls: for this, I think, muſt completely deſtroy it. If the gaſeous oxyd be the infection, or forms the principal part of it, as we have found it to be a fluid ſomewhat heavier than atmoſpherical air, it may be precipitated on the ground or walls where theſe animals may breathe it, by this means preſerving the infection longer in the place.

It is not a new obſervation, that it may be communicated by the animal's breath or vapour; it is poſſible though uncommon: for few dogs approach ſo near when under the diſeaſe, as to breathe on the animal they ſee without biting. The fact cannot be proved but in a kennel, where the mad dog is ſo confined as to prevent his biting, and the reſt of the pack ſuffered to remain at liberty. James denies that the dog's breath can infect man. If the mad animal could be long enough detained ſo near as to breathe with full force for a

certain

certain time on his face, ſo that the expired vapour might, in an accumulated form, load the air he breathes, or lodge about his lips and gums, it would excite my ſuſpicions for the conſequence.

If the poiſon of fevers can be communicated by vapour, and brought into contact through the medium of reſpiration with the lungs, or by deglutition with the ſtomach, analogy leads us to conclude, that concentrated vapour, highly charged with rabid poiſon immediately from the dog's mouth, would have the ſame effect; though it would be more certain by inoculation.

The gentleman who kiſſed his rabid dog before he ſent it to be drowned, took the diſeaſe;[r] ſo did the Swediſh boy, who ſlept with an infected puppy. Both, I grant, might have taken it by abſorption, not by the vapour from the animal's lungs. The boy indeed complained of the creature's ſtinking breath.[s]

I have ſaid the ſtomach; yet poiſons, it is acknowledged, are reſiſted by this organ, unleſs they be of ſuch a ſtrength, like the oxyd of arſenic, that they produce ſudden inflam-

 mation

[r] Vide vol. 1. [s] Vide Caſe, Appendix.

mation and gangrene. In decompoſing poiſons of ſeveral kinds, whether conveyed by vapour, by fluid, or in a more condenſed form, the gaſtric liquor ſeems to poſſeſs a particular power. The ſmall pox is communicated by vapour as well as by inoculation. Sutton however could not communicate the diſeaſe by pills impregnated with the variolous matter introduced into this organ, and repeated experiment confirmed the fact.

Another auxiliary circumſtance in tracing the remote cauſe of Hydrophobia in the canine tribe ariſes from the particular form of the ſkin, which is either wholly or nearly deſtitute of perſpirable pores. This is an opinion of conſiderable antiquity. When obſervation becomes the baſis of opinion it deſerves credit; if credulity gives it birth, and a neglect of examination ſuffers its currency to continue uncontradicted from generation to generation, the firſt attempts towards eradicating the error will not paſs without ſevere ſtruggles on the ſide of prejudices in favour of the old. The different ſtructure of the ſkin could not be hid from the moſt ſuperficial obſerver, while he daily ſaw the different effects of exerciſe on the dog, compared with other animals. Copious

perſpi-

perſpiration bedewed the ſurface of the horſe, the ox, cat, &c. But from the ſurface of this animal none was apparent, let the exerciſe in the chace be ever ſo long continued.

A larger quantity of vapour exhaled from the lungs; and while his tongue lolled out of his mouth, as if more commodiouſly to catch the cooling air, the trachea ſeemed widened to receive an appropriated portion of the atmoſphere to ſupply the blood, and to give exit to an equal quantity of noxious matter by each expiration. Thus, in a given time, an equal portion would be thrown off from the ſyſtem by the increaſed frequency of breathing, as would have taken place had this been rendered unneceſſary by the enlargement of the cuticular pores. It was obvious, that they would attribute ſome ſhare of the hydrophobic malady to this peculiarity, eſpecially as an increaſed quantity of foam was often a concomitant of Hydrophobia.

With reſpect to the proof of want of perſpiration Boerhaave inſtituted an experiment. In his hands it turned out a confirmation of the old opinion. He put a dog, a cat, and a ſparrow into a wooden cage, and placed them in the drying room of a ſugar houſe, the heat

of

of which was 146° of Farenheit's ſcale. After the dog had remained 15 minutes here, he began to pant and ſhow great ſymptoms of oppreſſion and faintneſs. A copious ſaliva of a red colour, and a moſt fœtid ſmell iſſued from his mouth: ſhortly after he died; but it is affirmed without the leaſt ſweat. "*Ne minima quidem nota ſudoris in hoc cane apparebat.*"

The cat which was incloſed in the ſame place ſweated profuſely, and was as wet, according to the author's phraſe, as if drawn through a river. The ſparrow died in ſeven minutes. The heat of the dog's body, at the time of his death, was 110°; the animal weighed ten pounds.[t]

The validity of this experiment however has been called into queſtion. Later obſervations indeed militate againſt it. Had the dog been immerſed in a glaſs bell (his head excepted) and detained there, properly ſecured, for an hour at leaſt, free acceſs being given that he might breathe the atmoſpheric air, as in common, a different reſult might have been diſcovered. The exhaled vapour would have

[t] Vide Chem. tom. I.

have dimmed the internal ſurface of the glaſs, and perſpirable pores, though minute in proportion to other animals, have been detected. In this way the quantity paſſing off in a given time might have been calculated to the greateſt exactneſs.

I do not recollect whether Linnæus made the experiment, but his opinion is in favour of perſpirable pores: *vix ſudat* are his words, plainly implying the diſcharge, though ſmaller than in other quadrupeds. The ſtrong ſmell emitted from a dog, is brought as a farther proof; and as a ſtill farther the print of his foot is aſſerted to leave a quantity ſufficient to enable another dog to trace him at a conſiderable diſtance. Taking it without farther inquiry for granted, that diminiſhed perſpiration is ſupplied by a larger pulmonary ſecretion, and that a larger portion of ſaliva flows from the mouth, what effect are we to expect from this peculiarity in the dog in the production of Hydrophobia?

As a certain quantity of excreted and ſecreted matter muſt paſs from the body daily, in order to keep in equilibrio the balance of health, and as certain organs are allotted for this office, ſhould any of them be accidentally deranged,

deranged, we find, by a law in the ſyſtem, the defect ſupplied by an increaſed ſecretion in other parts; and this continues to act till the recovery of their aſſociate; and, like ſympathizing friends, to alleviate the diſtreſs of a kindred intimate, they divide for a time the labour among them. Thus the urinary diſcharge becomes vicarious with that of the ſkin, and vice verſa.

The lungs in like manner, being a large ſecreting ſurface, partake of this law, and aſſiſt in ſupplying the defect in the ſkin. Hence it has been ſuppoſed, that the quantity of matter to which the ſtructure of the ſkin denied an exit, paſſed off in the dog by the urinary and pulmonary ſecretions. An increaſed vapour evidently iſſued from the lungs, and a frequency of paſſing urine above other quadrupeds, obſerved at the ſame time in this animal, confirmed the opinion.

In regard to the laſt, it has not been proved that the quantity of urine paſſed in a given time, exceeds in any great degree, the ſame in other quadrupeds poſſeſſing more numerous perſpirable pores. His propenſity to frequent micturition ariſes from the ſtructure of his veſica urinaria. It is ſmall and contains but little

before

before irritation on the neck of this organ impels this animal to diſcharge what is collected. It is alſo of a more muſcular texture, which gives an increaſed ſenſibility contributing to the ſame end. In animals where this veſica is both more capacious and more membranous, and whoſe diet and habits widely differ, eſpecially in the latter, micturition was not ſo often neceſſary.

But the remora in the dog might have ſubjected him to inconveniences; for his agility might not only have been impeded, and thereby ſome interruption given to his turning in purſuit of the chace, by carrying for hours a quantity of urine about with him; but what might ſtill be of more conſequence, the fluid, like other inorganized matter placed in favourable degrees of heat, might become more acrid, according to common language, proving injurious to health.

The injury in this caſe would not be confined to the containing veſica; abſorption would carry it through the ſyſtem; for there is no doubt but this proceſs takes back into the general maſs part of the ſecreted urine, not only in diſeaſe where the delay of expulſion is ſometimes conſiderable, but even in health.

The

The acrimony would be greatly increaſed from the nature of the food, (fleſh) and ſhould the animal be ſubjected to other occaſional cauſes, ſuch as hunger and cold, his frequent lot, the miſchief would be heightened, becauſe the ſame fluids would be carried back, and again ſecreted through the kidneys, when it would be returned to the veſica urinaria in a ſtate ſtill more diſpoſed to putrefaction.

The late Profeſſor Gregory attributed much of the cauſe of Hydrophobia to the ſtructure and offices of the canine veſica urinaria. I ſhall not venture to determine how far his opinion is founded on fact. He obſerves, "you may take it for a general rule, that thoſe creatures that feed upon animal food have their bladder more muſcular, and conſiderably ſtronger and leſs capacious than thoſe that live on vegetables, ſuch as horſes, cows, ſwine, &c. whoſe bladder of urine is perfectly membranous, and very large. This is wiſely adapted to the nature of their food; for as in the firſt *all their juices are more acrid;* ſo, in a particular manner, their urine becomes exalted, which, as its remora might be of very ill conſequence, muſt neceſſarily be quickly expelled. This is chiefly effected by its ſtimulating this viſcus

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more ſtrongly to contract, and ſo diſcharge its contents. And if theſe creatures, whoſe fluids have a tendency to putrefaction, are expoſed to heat or hunger, the liquids muſt, for a conſiderable time, undergo the action of the containing veſſels, and frequently perform the courſe of the circulation without any new ſupplies of food; by which the fluids become more and more acrid, the creature is apt to fall into *feveriſh and putrid diſeaſes*, and in fact we find, that *theſe cauſes are ſufficient* to produce that fatal and melancholy diſtemper, the *rabies canina, vulpina*, &c. in theſe animals; whereas thoſe that feed on vegetable food ſeldom or never contract thoſe diſeaſes, but by infection."[u]

The quantity of vapour paſſing from the mouth, and the quantity of ſaliva to which dogs are ſubject, eſpecially after ſevere exerciſe, were naturally referred to the law of *tranſition*.[v] A part of the duty which ſhould have been performed by the ſkin fell upon the pulmonary and ſalivary organs. This ſtructure of the ſkin therefore led to the ſuppoſition that it contri-

[u] Vide Eſſay on Comparative Anatomy.

[v] Vicarious Diſcharge.

contributed to rabies; and obſerving an increaſed diſcharge of ſaliva when the animal was under this malady, this idea was farther ſtrengthened. That a ſomewhat increaſed ſecretion takes place from the mouth of rabid animals of every ſpecies is a fact: but has the queſtion been fairly put, from whence comes the diſcharge? Is it from the ſalivary glands, from the ſurface of the lungs and bronchiæ, or from the other paſſages in their vicinity, the œſophagus and ſtomach?

On ſtrict examination, I believe, the ſalivary glands will be found but a diſtant agent, if agent at all, in the production of Hydrophobia. Little or no tumefaction is diſcovered externally in them. Internal of the mouth they exhibit no inflammation or enlargement ſufficient to mark them as the principal ſeat of the complaint. They have been examined after death, and when cut through no traces of inflammation appeared, nor redneſs, more than a ſmall extravaſated watery blood iſſuing from divided veſſels might account for; ſuch as may be ſeen in cutting through a healthy part.[w] The pancreas,[x] generally

[w] Vide Diſſections. [x] Ibid, for healthy pancreas.

rally conſidered as the largeſt gland of a ſalivary kind in the body, has not, I believe, appeared on diſſection diſeaſed. Little therefore is applicable to the ſalivary glands, as far as diſſection or their increaſed ſecretion diſcovers. The ſame may be affirmed of the pulmonary ſyſtem. In ſome diſſections indeed the veſſels of the lungs have been found turgid with black blood; but other marks of injury attributable to this diſeaſe were not detected. The ſkin therefore, it would ſeem, as far as it contributes, from its ſcanty outlets, to throw a greater quantity of fluids on theſe ſyſtems, can ſcarcely be accuſed of being a ſtrong additional remote cauſe of rabies. This ſtructure is not diſeaſe, becauſe it is natural to the animal; and granting a large ſecretion to the pulmonary and ſalivary ſyſtems in the dog, neither is this ſecretion diſeaſe for the ſame reaſon.

The animal however may be placed in ſituations where theſe increaſed diſcharges may favour the production of the ſpecific infection, and as we ſee, become a ready medium for its communication. If a putrid ferment be acting internally, deleterious to the animal, the ſecretions under conſideration may be altered. The pulmonary ſecretion is intended indeed to convey

convey from the body, eſpecially the blood, noxious effluvia. The ſuperabundant carbone, as well as other accumulating matter unfriendly to health when in exceſs, is, by this proceſs, removed: but before they can communicate rabid infection, it appears to me they muſt mix with matters from the ſtomach, to convey virulence of ſufficient ſtrength to infect. Provided indeed the ſituation of the dog had been ſuch for ſome time previouſly, that no new chyle was added to the blood, owing to deficiency of food, the general maſs muſt thereby be in a condition more favourable to the production of diſeaſe, and muſt accelerate the completion of a proceſs already begun. In this ſenſe the pulmonary diſcharge is an acrid fluid, and muſt contribute its ſhare.

The blood of a rabid dog, which appears to be changed in its component parts more than theſe diſcharges, and which is evidenced by its retaining ſometimes fluidity after death; and ſometimes by its black colour, and grumous conſiſtence, is incapable of communicating the infection. A quantity of it hot from the veſſels, in conſequence of a ſudden wound, has ſpurted into the mouth, and on the face of the perſon engaged in the deſtruction of a

rabid

rabid animal, without being followed by the diſeaſe.[x]

In a word, though the form of the cuticle in this animal's body, may contribute in ſome ſmall degree in ſubjecting him to the complaint, I conſider it one of the leaſt operating cauſes enumerated.

With reſpect to the urine, when retained longer in its natural reſervoir than is conſiſtent with health, and then re-abſorbed; and again, by the uſual ſecretions, falling upon the more delicate parts of the machine, it has frequently been followed in man with violent conſequences. Tranſlated to the brain, mania has ſeized the patient, and fatality ſoon ended the conflict.

The urine is the moſt ſpeedily putreſcent of all the animal fluids.[y] The compoſition is multifarious, and muſt give riſe to a variety of new products. Already has it been ſelected and ſeparated as a recrementitious ſaburra. If in man, a conſiderable part of whoſe food is vegetable, ſuch baneful effects ſucceed its re-abſorption, a ſimilar re-abſorption in the dog will

x Vide James on Canine Madneſs.

y Vide Plenck's Hygrology.

will be even a more active agent. This will be eaſily underſtood from the kinds of food conſumed by this creature. Not only is it of the animal kingdom, but often their fœcal recrements already in a condition poiſonous to animal life. The retention and re-abſorption therefore of urine into the habit cannot fail to be a powerful co-operating cauſe in giving exiſtence to the complaint. Coſtiveneſs, a ſtate to which the animal is prone, and is now become diſeaſedly augmented, is an internal cauſe perhaps even more powerful than the former by the long retention of a maſs not leſs putreſcent in the inteſtines, and along with this a deficiency of water, together with the heat of the ſeaſon, muſt likewiſe be powerful in producing infection.

If infectious fevers can be produced in the human race by debility, or a long train of continued actions deviating from health induced on certain organs, the ſtomach and chylopoietic viſcera for inſtance, gradually reducing the whole frame to a diſeaſed action, without any contact or communication with external infection, diſeaſes of a different ſpecies, by ſome ſmall difference or variety in the products of the fluids, can eaſily be conceived to ariſe without

without external contact or infection with their external ſpecific matter.

If the retention of hydro-carbonated and azotic gaſes around the body, to the excluſion of a ſufficiency of vital air, accompanied with hot and moiſt weather, or with the ſcorching rays of a perpendicular ſun, give birth to peſtilential infection; if cold, moiſture, vitiated air, and ſalted proviſions give riſe to another diſeaſe, the ſcurvy, once, but now much leſs the dreaded ſcourge of our brave ſailors, we cannot deny, but under certain circumſtances, the canine malady may be equally produced without the neceſſity of external contact with its ſpecific matter. Small truly may be that variety in the component parts of the poiſon, which conſtitutes the foundation of a different diſeaſe. To inveſtigate this will be an ample field for future pathological reſearch.[z]

To ſum up the whole; the remote cauſe is not to be found in one ſeaſon, climate, or ſitua-

z Profeſſor Mitchill's expanded ideas on the intereſting ſubject of contagion highly merits the reader's peruſal: nor is the public leſs obliged to the benevolent and patriotic Beddoes for the publicity he has given to this memoir, by inſerting it in his Conſiderations on Factitious Airs, part 5, Appendix.

ſituation only, but in ſituations, ſeaſons, and climates apparently oppoſite to each other; yet ſo connected with reſpect to animal productions, that an opportunity is afforded for the formation of the ſame ſpecies of matter. It may be connected with heat, and with its oppoſite, cold; with hunger, and high feeding; with want of exerciſe, and deficiency of water; with coſtiveneſs of habit, or with lodging in filth.

When the poiſon is once formed, inoculation may retain it in the neighbourhood for a time, but it muſt afterwards ceaſe by the deſtruction of the animals which it infeſts; and at ſome interval, by a ſimilar concourſe of circumſtances, may re-appear, ceaſe as before, and ſo continue alternating, or become extinct, in like manner as the typhus of the Old Bailey and other priſons; peſtilential diſeaſes; ſpecific eruptions; the yellow fever, the late ſcourge of the weſtern world; the plague of Athens, of Marſeilles, or of London. To theſe and no other ſources need we look for the remote cauſe of rabies in the canine race.

Reflections on ſome Signs hitherto conſidered as diſtinguiſhing a rabid Dog----- Refutation by Examples.

TO diſtinguiſh the diſeaſe in this animal in its earlier ſtages is of the higheſt importance to ſociety. Every writer has laid down ſome rules by which the animal may be recognized when under the malady. In the laſt ſtage of the complaint the taſk is eaſy; in the earlier by no means obvious. Some of our lateſt and moſt accurate authors have been led into error by giving too implicit confidence to the aſſertions of their predeceſſors, or from want of opportunities themſelves of making more accurate obſervations. Even Boerhaave has committed this miſtake when he aſſerts, that a dog in the firſt ſtage of madneſs will

refuſe both meat and drink; and Mead has likewiſe fallen into the ſame error. We are now in poſſeſſion of ſeveral melancholy inſtances, where perſons truſting to this ſign have incautiouſly permitted the animal to approach them, and even careſſing it while feeding have been bitten, and periſhed.

With reſpect to the former the caſe of Maſter Rowley is in point. From this example alone, not relying upon what authors had ſaid, I attempted ſeveral years ago[a] to refute this commonly received opinion. The reader, by turning to the caſe,[b] may ſee, that ſo far from the creature refuſing to eat when it ruſhed into the parlour where the accident happened, that on a plate of meat being ſet before it by order of the lady of the houſe, under the impreſſion of its being a hungry ſtray dog, as it looked thin and poor, it inſtantly began to eat; and it was in the act of careſſing it while lapping that Maſter Rowley received the bite. "The animal turned from its meat, and bit him on the right ſide of the lower lip." It bit the French woman (a maid ſervant) a few

[a] Vide Remarks, &c, edit. 1, Ipſwich, 1785.

[b] Vide Appendix.

few minutes before on her giving it victuals, but no notice was taken till it bit the young gentleman. The diſeaſe appears from this to have been in an early ſtage, and that its effects were chiefly obſervable from the animal's iraſcibility, and from the meagre and hungry look which firſt excited the ſympathy of the family; for it attempted no farther miſchief, but ran away.

If this ſubject needed more illuſtration, the autumn of 1795 furniſhes me with two more examples.[c] Theſe have already been detailed. The reader may remember, that the little parlour bitch not only followed her miſtreſs while under the diſeaſe, on a viſit, and returned with her home unſuſpected of illneſs, but took its food as uſual, though at this time it communicated the diſeaſe to a dog in the family, and bit one of the children, but happily without effect. It was after this likewiſe when the animal ſuffered its mouth to be forcibly opened and inſpected, in order to remove the alarm of the family, as already mentioned in the hiſtory of the caſe. It was ſtill later in the diſeaſe when it ſuffered itſelf peaceably to be tied

[c] Vide vol. I, page 18.

tied up; and almoſt to its death, which took place on the chain, it continued to eat and drink.

The other example was even ſtronger, and more in point if poſſible; for the dog was tied up almoſt immediately after the bite; was kept on the chain till the termination of the diſeaſe, during which it ate and drank in the uſual way till the night previous to its death, when its uncommon and melancholy howlings, altogether unlike the barking of an healthy dog, marked the creature's great ſufferings, and the near approach of its end. To this I may ſubjoin the teſtimony of Dr. Bouteille, who alſo confirms the obſervation of brute animals having no dread of water while under rabies. He inſtances it in a mad wolf, which ſwam ſeveral times acroſs a river; and aſſerts from his own knowledge the fact of ſeveral rabid dogs having drank water.[d]

The reader who has peruſed Dr. James's treatiſe, may recollect how the little dog is ſaid to have refuſed the bread from the cowherd boy's hand, while it turned about at the ſame moment, as he catched it by the collar, and

[d] Vide Mem. de la Soc. Roy. de Medicine, ann. 1783.

and bit him. This is the dog that followed the lady's carriage,[e] and attracted her notice ſo much on account of its courage, as ſhe was inclined to believe from its running after, attacking, and beating dogs of a much larger ſize, and which ſhe unfortunately took home; but ſoon found her miſtake, as the creature no ſooner entered her houſe than it bit not only one of her children, but herſelf dreadfully. He will perhaps, from this example, be inclined to credit the old opinion of mad dogs refuſing to eat. The above caſes however muſt outweigh all credulity, and confirm, with the unprejudiced, the oppoſite fact. Beſides, this dog was not in an early ſtage of the diſeaſe, as is evident from his fury, attacking every animal of whatever kind which came in his way.

As to the refuſal of drink, or the dread of water which mad dogs are ſaid to have, it is ſufficiently diſproved in the foregoing examples. Theſe animals neither refuſed drink, nor dreaded, nor ſhunned veſſels of water ſet before them. I can give two more examples to

[e] At Medoc, near Bourdeaux.

to the ſame effect: Mr. Mills[f] affirmed to me, that he had a dog which lapped water in the laſt ſtage, and even a few hours before his death. Mr. Tuſon,[g] who was then preſent, confirmed the fact from his own obſervation in other inſtances. Dr. James[h] alſo teſtifies to the truth of ſimilar occurrences; for though he acknowledges to have ſeen mad dogs refuſe both meat and drink, yet he never ſaw them expreſs the leaſt dread or horror at the ſight of water or other liquids: on the contrary, he aſſures us, that he has himſelf ſeen mad dogs traverſe water not long before their death. Dr. Meaſe,[i] on the authority of a friend,[k] relates an inſtance of a mad dog ſwimming acroſs the river Petapſco, near Baltimore.

From all theſe inſtances reſpecting meat, drink, and dread of water, the inference is, that what authors have laid down as a general rule muſt not be taken as ſuch, but conſidered as

[f] A Clergyman in Suffolk.

[g] The ſurgeon who attended Maſter Rowley.

[h] Vide Canine Madneſs.

[i] Vide Bite of Mad Dog, p. 51.

[k] Mr. Andrew Ellicot.

as referable to the laſt ſtage; and that even there it is not uniform: that though dog's occaſionally near their death, or even a day and upwards before it, may refuſe meat and drink, yet in the early ſtage there ſhall not perhaps be found a ſingle example where theſe were rejected, but on the contrary they ate rather voraciouſly.

The next ſign, which has been conſtantly mentioned as a proof of the abſence of madneſs in a dog, is *fawning*. If a dog ſhows this mark of attention and kindneſs, ſuſpicion of diſeaſe was totally removed. This error is fraught with great danger, becauſe it tends to create a greater familiarity with the animal. We have examples ſufficiently numerous in the hiſtories annexed to convince us of dogs being infected, and inoculating the diſeaſe, yet fawning on their maſter or on others, and flying up to lick their hands in good nature. They have taken food when offered, without any perceptible change, appearing as in health, except in their temper, which is now ſomewhat more eaſily ruffled. This conſtitutes an early ſtage of the diſeaſe; but it is this ſtage we ſhould endeavour to find out, the more effectually to obviate the approaching evil. A

future

future ſtage diſcovers itſelf unequivocally by ſeveral ſymptoms not to be miſtaken.

When the dog becomes diſeaſed a ſuſpicious obſerver will mark it in his eye; he will mark it alſo by ſome changes in the animal's temper, perhaps by watching him in his ſleep, in his gait as he runs, and alſo by ſlight convulſions, or ſymptoms of uneaſineſs in his dreams more than uſual; for the dog is extremely ſubject to dreaming. Every obſerver of the habits of dogs knows this fact. In ſleep he will bark, be angry, and growl; and in turns ſeem pleaſed, as if conferring and receiving careſſes, or enjoying ſome grateful food. The emotions created by his paſſions under the influence of ſleep are very evident. You may diſcover his ſenſations of pleaſure, of pain, of joy, or of grief, by his dreams. I have frequently amuſed myſelf by interpreting his ideas in this ſtate, and have followed him through the chace, or obſerved him in conteſt with ſome enemy. I have heard him howl from the ſuppoſed wounds he received, ſtart from his ſleep in anger, and inſtantly recovering his recollection, look, as it were, aſhamed at the impoſition he was under, and the miſtake of his paſ-

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ſion, then ſaunter once or twice round the room, lye down, and ſleep again.

A dog in madneſs has been obſerved to ſuffer ſlight convulſions in ſleep, to moan and grunt frequently.[1] A change in the appearance of his coat is very early diſcernible; it is leſs ſmooth, while the creature itſelf ſeems ſomewhat ſhrunk. There is ſome melancholy in his aſpect more than heretofore. When he runs or walks it is with his tail drawn between his hind legs, in the manner a dog is ſeen to do in turning away from a perſon affronting him. Other dogs are ſaid to ſhun him; but there is by no means ſufficient evidence of this in the early ſtage of the complaint. I ſhould be unwilling to truſt to this dubious mark. In a later ſtage it may be true. In the inſtance of the little dog following the lady's carriage near Medoc, the dogs whether large or ſmall, ſtrong or weak, ran from him as he approached. This dog however was evidently in a late ſtage of the complaint. His tongue is ſaid to have lolled out of his mouth, which, from obſervation, never takes place but in the laſt ſtage. He had deſerted home, had for-

[1] Vide vol. 1, page 20.

forgotten his maſter, and loſt all recollection of his former reſidence, which never happens till the diſeaſe has gained great ſtrength.

To conclude; it will be ſafer to truſt, as a mark, to the changed habits of the animal, than to the three negative inſtances too much relied on by authors and others, that if a dog takes food, and drinks or fawns on, or careſſes his maſter or the family wherein he is kept, he is free from the malady, and cannot infect. The omiſſion of barking under the diſeaſe is another of thoſe dubious ſigns which authors lay down as one of their general rules. They are here, as in the foregoing, right in as far as reſpects the laſt ſtage. I recollect no inſtance where the victim of the animal's fury is at this time warned by previous barking. For the moſt part he is ſuddenly aſſailed, and often neither ſuſpects nor ſees the animal, till he feels the pain of the wound, which is given from behind. But this is not an univerſal rule. In the early ſtage the animal has forgotten none of his uſual habits, and a ſtranger may be aſſailed by previous barking, and afterwards wounded. This it is incumbent on him to keep in view. The creature indeed is more apt to ſnarl from the change in his temper at ſtrangers

ſtrangers or others, and even by a trifling provocation, than when in health. I know not whether Lommius ſpeaks from experience, but he expreſſly mentions the barking of mad dogs. From their manner of barking, it is ſaid, other dogs are enabled to diſtinguiſh the diſeaſe. This prompts them, to fly from them with precipitation and horror.

Let it be remembered as a caution of the higheſt importance, never to approach a ſtrange dog with familiarity, even though accompanying his maſter, though poſſeſſing every apparent mark of health. Still leſs, if poſſible, ought we to approach a ſtrange or ſtray dog, but ſhun him by every means in our power. Should a dog occupy the footpath on which I am to paſs, I ſhould rather chooſe to take a wide circle round him, than run the riſk of rouſing, and turning him out of my paſſage. Dr. J. Hunter aſſures us, that in moſt of the inſtances brought before their ſociety the diſeaſe was contracted by approaching familiarly ſtrange dogs.

In every caſe of ſuſpicion let our firſt endeavour be to ſecure the animal by an iron chain. I ſhould be unwilling to truſt any material more penetrable by the teeth. Hemp

or

or leather may be gnawed through or broken, and the family, ſhould the animal become mad, be thrown into imminent danger. An accident of this kind took place with one of the dogs already mentioned.[m] I have ſeen ſtrong pieces of wood gnawed nearly through by the violence of the animal in ſtruggling to break from his confinement; and I have ſeen marks of his tuſks left even in a piece of iron chain. All however are not thus furious, for ſome die without much ſtruggle.

Suffer no ſuſpicious dog to be killed. To deſtroy the animal is both unſatisfactory and cruel. The ſecurity obtained by this arbitrary proceeding is neither politic nor merciful; nor have we greater ſafety than by the more prudent and œconomical method of chaining. Let the animal be fairly tried for his life, and let his *jury* be time. Three weeks or a month is all the impriſonment neceſſary; for much beyond that period there is no inſtance of an infected dog ſurviving.

A ſuſpected dog appears in the village; he may be mad or otherwiſe; he may bite many; he is a ſtrange dog, and running at large; it is prudent and proper to deſtroy him as ſoon as

[m] Vide vol. 1, page 24.

as poſſible. I beg not his life: this act is mercy, as it ends his career, prevents danger, and ſhortens his exiſtence but a trifle ſhould he be mad. Do not however, as is uſual, proceed to maſſacre all the dogs of the town. A ſhort impriſonment will decide and diſtinguiſh the infected from the ſound.

It is no leſs improper to deſtroy your own dog, ſhould he be ſuſpected, or have accidentally bitten thoſe of the family. By his death the truth cannot be aſcertained, though his impriſonment will accompliſh it. Lately[n] a maſſacre of this kind took place here;[o] nor was I able to ſave my own ſpaniel, then condemned with others, ſaid to have been bitten by a ſuſpected dog paſſing through the town.

Dogs are ſubject to various diſeaſes beſides madneſs, neither infectious nor dangerous to others. A dog is to many of great value, and they ſell frequently at a high price. I have known from two, to ſix, or ten guineas paid for a pointer; and I have heard young ſportſmen ſpeak of much higher prices.[p] In the light

[n] Summer of 1795. [o] Ipſwich.

[p] DASH, a favourite and well-famed pointer belonging to Lieut. Colonel Thornton, of Thornville Royal, in York-

light of property alone the loſs of ſuch a dog is conſiderable. Shall bare ſuſpicion then rob me of it? This is unjuſt to me as a citizen, and cruel towards the animal as prejudging his life. Suſpicion merely, whether well or ill founded, ought not to determine the act; ſecurity will be as well obtained by the chain as by either the halter or bullet.

Some timorous perſons are eaſily alarmed, and are ready to execute, on the ſlighteſt occaſion, this final doom. If examples of mercy were neceſſary, we have an excellent one by Dr. James, whoſe knowledge of the œconomy and diſeaſes of dogs, and prudence at the moment of a raſh reſolve, ſaved the life of a little bitch under a fit of convulſion.

He walked one day with a friend towards Highgate; they were followed by a little bitch that a few days before had loſt its puppies. Maternal affection and melancholy had reduced the creature into a ſtate of diſeaſe which

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Yorkſhire, was ſold to Sir Richard Hill. Bart. for 120 guineas, and a caſk of genuine Madeira; and, after breaking his leg on the Moors, was re-purchaſed by the Colonel, agreeable to a ſtipulated condition, for 50 guineas, as a *ſtallion* to breed from, and conſidered in that ſtate a great acquiſition. Vide Sporting Mag. for April, 1796, p. 20.

was marked by ſtupor, heavineſs, and occaſional convulſive fits. While its maſter and the Doctor continued their walk it fell into a fit, and ſhowed ſymptoms not unlike madneſs. In this, recollection was loſt, and the animal anſwered not when called by its name. It even ran away to the diſtance of a quarter of a mile, and couched on the edge of a ditch. Terror ſeized the maſter; he would inſtantly have killed it, but James repreſſed the blow. They purſued the animal, and with much trouble coaxed it to follow them. In the interval of this fit its recollection had ſomewhat returned. Paſſing on they came to ſome haymakers, one of whom was entreated to bathe it in a pond which was near. The man, by putting his fork under its collar, lifted it up, and plunged it into the water, from whence, after ſtruggling a little time, it ſwam out, and was cured of convulſions, and remained in health long after.

A farther inconvenience attends killing a ſuſpected dog. Should a bite be accidentally received, a dread of the conſequences muſt dwell on the mind, which from a contrary practice, if the dog was not mad, would in a ſhort time be diſſipated. This is a much

better

better ſecurity, and affords more ſatisfactory information than the dubious teſt adviſed by the Academy of Sciences. There a piece of boiled meat is directed to be rubbed on the teeth and gums of the dead animal, and to be offered to another dog. Should he be affected with madneſs, it is affirmed, that the dog to which this piece is offered, will fly from it with horror, barking and howling: if not mad, he will inſtantly devour it.

If, by the precipitate outrage of the populace, a ſtrange dog be hunted down and killed, under the idea of madneſs, this teſt may be applied; but if the animal, either through rage or otherwiſe, has bitten other dogs, the teſt to me would not be ſufficient; nor ſhould I be contented with leſs than confinement on the chain.

It may be thought unneceſſary to waſte the reader's time on a ſuperſtitious error reſpecting the liver of the mad dog being an antidote to his bite. Thouſands of innocent dogs have fallen victims to this erroneous notion. At this day, among the common people, it is far from being eradicated. I had a marked inſtance of it ſome years ago. A man was bitten by a neighbour's dog; whether by acci-

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dent or provocation I know not. The alarm inſtantly ſpread, that the animal was mad. Rage, fury, horror painted the poor man's viſage; already he anticipated his miſerable end.

The populace aſſembled, and at the man's entreaty imperiouſly demanded the dog's life, that the liver might be eaten by the wounded perſon. The owner of the dog refuſed compliance, ſhut his doors, and from his windows begged them to deſiſt, aſſuring them the dog, which was then by his ſide, was not diſeaſed. It would not do; they threatened his houſe with deſtruction if he perſiſted in refuſal.

Paſſing through the ſtreet at the ſame time I mingled with the multitude, inquired the cauſe of the tumult, and obtained acceſs to the bitten perſon. The fury of his aſpect, and the convulſive agitations of his whole body ſtruck me with ſuch horror as almoſt prevented my addreſſing him. After ſome fruitleſs efforts I gained his attention, and aſſured him I ſhould ſee his requeſt complied with, if he ſtill perſiſted; but ventured to tell him, that chaining the dog was preferable; for if he was mad it would ſoon appear, and

then the liver ſhould be given: if otherwiſe there would be no grounds either for the alarm, or the dog's death. By this he was appeaſed, the populace ſatisfied, and the owner readily agreed to chain the dog. The creature was free from diſeaſe. I attended the poor man daily for ſome time, till his mind was reſtored to quiet, and a fever, into which his agitations had thrown him, was removed.

He who has ſeen fear in its greateſt force, as in this inſtance, can have but a faint idea of what it can produce on the human body from the moſt animated deſcription.

In a ſecond inſtance, where a dog bit a ſoldier, and where the creature's liver was alſo demanded, I cauſed the animal to be tied up for ſeveral weeks, and thus relieved the poor man from apprehenſions, which might ever have remained with him, as well as ſaved the animal's life.

From the nature of a phyſician's duty, he has oftener to combat ſuperſtition, prejudice, and vulgar error, than other men purſuing different profeſſions; but he ſhould perſevere. The anniverſary of a bite from a ſuſpected dog, or the influence of the new and full moon are farther

ther ſuperſtitions occaſionally haunting weak minds. Theſe are real evils; and while the perſons believe in their truth they render them completely miſerable, as if the opinion was founded in fact.

Mrs. Bellamy ſuffered for ſeveral years, as ſhe declares, under the impreſſion of the appearance of Hydrophobia on the annual return of the day on which ſhe was bitten by her lap dog.[q]

Others have felt an unceaſing apprehenſion at the returns of the new or full moon, from the current belief, that the infection, were they previouſly bitten, would be rendered active, and excite the diſeaſe at theſe times; while another ſet again had their whole lives embittered from the time of the bite without intermiſſion, relying on the ſtories they had read, or were traditionally handed to them, of the poſſibility of the latent poiſon exciting the diſeaſe at any future and undetermined period, for ſixty years, or even the longeſt life. One reſpectable perſon I have been happily able to relieve from this laſt forlorn

[q] Apology, vol. 4, page 137.

lorn impreſſiion, as has already been related.

The erroneous notion, I truſt, will ſoon be completely removed from every rank and every denomination of men.

Some

Some Rules for obviating Infection in Dogs, or diſſipating it from infected Places where they are kept.

A Few hints on this ſubject is all I intend. It will be apparent that diet and cleanlineſs embrace almoſt every thing neceſſary to be advanced on this head. The rules generally laid down for diſſipating or obviating infection among the human race, will apply, with little variation, to our domeſtic quadrupeds.

As the dog has little reſtraint over his appetite, it will be neceſſary carefully to regulate not only the quantity, but the quality which he daily conſumes. On this head dog-feeders are conſtantly committing errors. Horſes or other animals dying by accident or diſeaſe are, for the moſt part, purchaſed both

for

for the uſe of the kennel, and for the food of our more domeſticated dogs. To this little objection could be made were the quality of the carrion kept in view.

If the few obſervations already given on the nature of animal poiſons, and the proceſs of putrefaction in dead animal matter be recollected, we muſt at once perceive of what importance the quality of their fleſh meat is to their health. It is not neceſſary to recapitulate what has been ſaid reſpecting the generation of poiſons, as produced by new combinations of different materials, looſened from the bonds in which they were lately held under the form of organized bodies, and now ſpeedily paſſing into other forms. Theſe not only may, but really do, in certain favourable ſituations, become new-modified and highly deleterious when mixed with the fluids of living bodies. We have rendered it probable that the hydrophobic, as well as ſome other poiſons, is formed in this way. Nay, it is equally probable, they become this or that ſpecies of venom or infection merely by ſome accidental variation in the proportions of the ſame materials. If this be granted, one of the principal rules of obviating this infection will

will conſiſt in denying our dogs fleſh far advanced in putrefaction.

Little attention, generally ſpeaking, is paid to this rule. Is it not common in families where ſeveral dogs are kept to obſerve carrion, purchaſed from ſome neighbour having the misfortune to loſe a horſe or other animal, dragged home and depoſited in ſome ſpot in the open air, or corner of a farm yard or orchard, and there remaining to putrify in the moſt nauſeous condition till the creatures can conſume it? I have ſeen, not unfrequently, even the quantity of a quarter of carrion ſuſpended upon the branches of a ſpreading tree, convenient to the kennel or dog houſe, putrefying and tainting the air to a conſiderable diſtance, even rendering it unſafe to be breathed, from which a part was daily cut down for their conſumption. Can dogs, fed in this manner, and at the ſame time prevented from exerciſe by being chained, be long preſerved in health? The thing is impoſſible.

Reflect on the proceſs of animalization, and you will eaſily ſee how unfit it is for the purpoſes of life, for the renewal of thoſe parts every moment undergoing changes, and becoming

coming defective by other proceſſes again conſtantly and neceſſarily carrying on for animal preſervation.

If to ſuch food of improper quality be added a quantity more than proportioned to the real demands of hunger, the miſchief accumulates. Suppoſe the animal be fed on offal freſh from the butchery, the condition is barely meliorated; for the putrefaction of theſe parts,[r] from their ſpongy texture, is extremely quick. When want of exerciſe and a coſtive habit are united, the ſeeds of diſeaſe muſt be rapidly generated. Let it then be a rule to regulate this part of their food. In vain will it be urged, that the dog delights in carrion, or that his natural propenſities lead him to prefer it, and therefore what nature propels him ſtrongly to cannot be injurious.

It is to be remembered, he is a voracious animal; will feed to the utmoſt extent of ſatiety if left to himſelf, till his ſtomach even diſgorges the uneaſy load; and ſo filthy likewiſe in his natural habits, that he will frequently return back into his ſtomach its newly diſlodged contents.[s] On this account prudence

[r] Tripe, liver, lights, &c.

[s] This obſervation has been long made. "As a dog returneth to his vomit; ſo," &c. Prov. xxvi. 11—2 Pet. ii. 22.

dence will dictate not to permit the animal to be guided by his appetite, over which he has ſo little controul. We muſt become his caterer; we muſt put him under a proper regimen, neither too meagre nor defective in nutriment on the one hand, nor too abundant, nor of the quality now deſcribed on the other.

Did my inclination impel me to keep a number of theſe animals for my amuſement, I ſhould be extremely circumſpect in what relates to this part of their diet. They ſhould have their *meagre* and their *meat* days; or, as I ſhall expreſs it, their *faſting* and their *feaſting* days. The quantity likewiſe ſhould be under ſtrict regulation, and ſhould be more or leſs according to the ſize, &c. of the animal.

Although the dog be a fleſh eater the mechaniſm of his ſtomach does not exclude him from vegetable diet. A proper portion of this ſhould be added. Nor ſhould I permit my dog on his meat day to receive it undreſſed. The proceſs of coction renders it more digeſtable and leſs putrefactive. Broth, with boiled barley, peas, and vegetables, wherein a certain portion of meat is ſhreaded, and boiled down, and thickened ſtill farther with potatoes, ſhould in my opinion, form one of his prin-

principal meat-day meals. It is now well underſtood how nutritive and wholeſome the potatoe is, not only to man, but to his domeſtic animals of every ſpecies. I know the dog is fond of, and will thrive well on ſuch a mixture; and I am perſuaded likewiſe of its greater cheapneſs than the raw offal, or corrupted carrion in common uſe.

Milk, I believe, is uſed in conſiderable quantities in the kennel. I approve much of the diet, but it is expenſive. I know ſportſmen in this country who keep a number of cows chiefly for the pack. A pottage of barley meal and water of a proper conſiſtence, and a mixture of milk will form an excellent repaſt. Some uſe a quantity of blood from the ſlaughter-houſe. This is extremely nutritive, even more than common fleſh; but it is ſpeedily putreſcent. If it be convenient once a week to feed with it, I ſhould recommend the preparation to be managed with ſtrict attention; for I ſhould not ſuffer it to be given them unboiled.

When received warm from the ſlaughterhouſe it ſhould be ſquaſhed and broken down by conſtant ſtirring, as it cools and coagulates, that the ſerum, coagulable lymph, and red

red globules may be mixed equally together. In this ſtate, with the addition of a little common ſalt, it will keep free from putrefaction a day or two, or even longer, according to the weather. It ſhould be mixed with ſome water, or milk, or both, when it is about to be boiled, and a quantity of barley meal ſtirred in to give it the conſiſtence of a thick jelly when the coction is complete. This will form a nutritive and wholeſome diet, being a compoſition of animal and vegetable matter.[t] In this manner his diet may be varied, the purpoſes of œconomy ſerved, and the dog enjoy better health than when a greater part of his food conſiſts of putrid raw offal, or more putrid carrion.

If it ſhould be objected, that a diet thus prepared will be leſs ſuited for the quickneſs of the ſcent neceſſary in the chace, or for the fierceneſs of the houſe dog, I anſwer, there is no proof, that the huntſman will find it ſo; or that the maſter of a tan yard, or other office, where

[t] A compoſition on this plan is uſed for food both among farmers and the poor, not only in parts of Scotland, but in the North of Ireland; and in the palatable manner it is cooked, intermingled with ſavory herbs, it becomes both a grateful and wholeſome diſh.

where his dog is centinel, will find him leſs active in oppoſing the thief. Let his veſſels be ſufficiently replete with nutritious juices, and neither vigour nor courage will be defective, while, by this means, we ſhall have the certainty of preſerving him from diſeaſes to which a more alkaleſcent food muſt render him obnoxious.

My next rule reſpects coſtiveneſs. To man or to quadruped this, long continued, is a dangerous ſtate of body. When the lacteals of the inteſtinal canal have ſelected the nutritious particles, the feculent, or more putreſcent parts remain in the gut to be carried off. If they are detained beyond a certain time in a ſituation ſo favourable for corrupting the body, it will be in imminent danger.

Let due attention be paid to the ſtate of their bowels. Should the plan of feeding be inſufficient, medicine muſt be interpoſed. Mercury, I believe, is principally adminiſtered. Turpeth mineral, or an union of this metal with the ſulphuric acid, was ſtrenuouſly adviſed by James. He conſidered it indeed both as a cure and preventive of Hydrophobia. In as far as it cleanſed the alimentary canal it prevented diſeaſe; ſo would any purgative. A

mix-

mixture however of jalap and calomel I do not think inferior, and perhaps it poſſeſſes a more draſtic power, not unuſeful by unloading the cerous arteries, while it diſcharges the feculent matter from the tube.

Another rule, equally neceſſary, relates to water. This is the natural beverage of the dog, as it is of moſt other animals. It is as neceſſary for his health as food. When treating of the remote cauſe, we found it to be one of thoſe abſolute neceſſaries, a deficiency of which is highly detrimental. This ſhould be pure as well as in due quantity. To kennels it ought to be ſupplied daily in ſtone troughs, or other conveniency, that the animals may drink when they pleaſe. To pointers, ſpaniels, greyhounds, &c. on the chain, the ſame care is neceſſary. And to theſe it is to be feared, that the want of attention in ſervants is oftener experienced, ariſing from their other avocations, than to thoſe in the kennel, where particular ſervants are appointed for the ſuperintendance of the pack.

I have often felt myſelf hurt in paſſing the little habitations allotted to theſe animals, which for the moſt part are of the ſize to admit only one, or ſometimes two, to obſerve them

them panting in a warm day, their tongues lolling out, and their eyes gliſtening, without a particle either of food or water within their reach. The former indeed may be ſupplied without detriment, at regular periods, but the latter they ſhould have conſtantly near them.

The ancients ſeem to have had good reaſon for attributing to a deficiency of water one of the remote cauſes of rabid virus. It is not neceſſary in this place to recapitulate the mode in which water may tend to obviate the production of this poiſon. Azote, or ſepton, is the moſt plentiful material of animalization. If ſufficient water be ſupplied, the hydrogene diſengaged by decompoſition will readily unite with it, and alſo with the ſuperabundant carbone; and both oil, uſeful to the machine, will be formed, and volatile alkali be carried off.

My next rule relates to exerciſe. There are few animals formed more for activity than the dog. His natural propenſity is hunting; and if he were at liberty and undomiciliated he would acquire his food by the ſwiftneſs of his foot. This ſhould teach us to alternate his confinement with a due portion of exerciſe. It is impoſſible for any animal long confined

to

to be in health. The different organs cannot duly perform their functions without exercise. Some parts altogether neceſſary to life, are ſo far removed from the ſource of circulation, that without the motion of the body the fluids muſt be interrupted in their courſe, and diſeaſe be the conſequence.

It will follow, that according as nature has given to the creature neceſſary powers of activity for its own exiſtence, in proportion will its confinement be detrimental. The neceſſity then of conſiderable exercise to this quadruped muſt be apparent. We have reaſon to preſume this rule to be greatly tranſgreſſed in this inſtance.

The dog, above all domeſtic animals ſubſervient to man, ſuffers the greateſt portion of impriſonment. The horſe, the ox, the ſheep range in our paſtures; even our domeſtic cat is not ſubjected to confinement; while the dog (the ſportſman's dog) is either locked up in the kennel, or confined within the bounds of two or three yards of chain, to his little ſix feet cell ſometimes for weeks, with little intermiſſion. How often are our ears aſſailed with their melancholy howlings as we paſs! They liſten with attentive ears to the tread of every

every foot, and watch the approach of every paſſenger, to whom, by their moanings, they endeavour to tell their ſufferings, excite his ſympathy, and implore his aid.

Among the cauſes likewiſe contributing to canine virus, confinement has generally been enumerated. In the ſeaſon of field amuſements this does not happen, becauſe they are exerciſed for their maſter's amuſement. In the ſummer however this is a frequent practice; yet from the heat of the ſeaſon confinement becomes ſtill more irkſome. He frets on his chain; and in conſequence of this irritation derangement both in his ſolids and fluids, and diſeaſe muſt follow. I would warn the ſportſman againſt this practice. I believe it is cuſtomary with many to diſperſe their young dogs through the neighbourhood, and board and lodge them with little farmers and cottagers of their acquaintance; but after a year old, or earlier, when the dog is *made*, as they term it, this is ſeldom practiſed. His ſummer is principally ſpent on the chain, if a pointer, ſpaniel, &c. but if a fox hound or harrier, in the kennel. From this confinement reſults another inconvenience; want of cleanlineſs.

This

This ſubject gives riſe to another rule, and one which requires our attention in no leſs degree than the foregoing. From the ſtrong ſmell natural to dogs, proceeding principally from the effluvia of the lungs, we learn, in ſome meaſure, its deleterious quality. From the confined ſituation in which they are placed, and from the great quantity daily exhaled, we may perceive how ſoon their cage (for it is generally cloſe boarded, pitched over, and weather tight) together with the ſtraw on which they lie, muſt become ſurcharged and tainted with this, as well as with their other excrementitious diſcharges.

It is well known how ſpeedily an animal, if cloſely confined in his own effluvia, and cut off from the atmoſphere, will periſh. This ſuggeſts the neceſſity of free ventilation, and change of litter. When we carry this idea to the kennel, the neceſſity of the rule becomes even ſtronger, and proportionably ſo to the ſmallneſs of its dimenſions. Here we have from twenty-five to thirty couples conſtantly under the ſame roof, which, like a chineſe houſe, conſiſts, for the moſt part, of but one low ſtory.

If proper attention be not paid to ventilation, the quantity of excreted matter from the lungs and ſurfaces of ſo many animals, muſt in a ſhort time favour the generation of infection. I could wiſh therefore the kennels to be ſupplied with a ſtream of running water, or that it ſhould be ſo contrived, that a ſmall rivulet, confined within proper channels, might uninterruptedly flow through it. The conſtant motion of the air in the place by means of the current, and the changes that would follow, muſt tend greatly to deſtroy this poiſon almoſt as quickly as it is formed, while at the ſame time the ſtream would ſupply drink.

A dog bath ſhould be one of the conveniences of a kennel, never, in my opinion, to be omitted. His ſkin is often thickly covered with duſt, which if not waſhed off occaſionally becomes interwoven with the roots of the hair, and being in a ſituation to partake of the heat of the animal's body, cannot fail not only to check the egreſs of perſpirable matter, which, it is now agreed, dogs emit, but by putrefaction muſt become an aſſiſtant remote cauſe of diſeaſe. Bathing therefore under this view, muſt

muſt be highly uſeful in removing from the cuticle this putreſcent covering.

In another view it is no leſs beneficial; it is a preventive, and perhaps likewiſe one of the moſt certain remedies for ſome kinds of convulſions to which the animal is liable. Even without proof, analogy with the human body would have led to this concluſion. Some of our own moſt dangerous diſeaſes of this claſs (the tetanic) are removed by cold bathing. The inſtance however of its efficacy in the dog does not leave us to analogy for proof, but gives us the direct fact.[u] Let it therefore be a conſtant rule to plunge the dogs into cold water frequently, and to take ſome pains in clearing the dirt from their hair. Nor ſhould I deem it an uſeleſs labour to rub each dog coming out of the water with coarſe canvaſs or clean ſtraw to dry his coat. When this operation is finiſhed the dog ſhould be aired a little, but the exerciſe ſhould be gentle.

I would follow, with little variation, the ſame method after bathing, with reſpect to exerciſe, as in our own ſpecies. The ſportſman will profit by this rule; his dogs will

u. Vide page 238.

will be in health when the ſeaſon invites to the field. The rule equally applies to every ſpecies, down to the young lady's lap-dog, and pampered companion of the elderly maiden. Often have I pitied the unfortunate animals, whoſe lots fell to their impriſonment. Stuffed with dainties, as improper for them as carrion for the human ſpecies, they contract diſeaſes at an early period. Go into the parlour of a genteel family, and on a cuſhion in a corner, for the moſt part, you may obſerve one or two ſuch, ſuffering the tortures of aſthma, and loaded with fat, the forerunner of diſeaſe. Wines of delicate flavour, and diſhes highly ſeaſoned are kept for theſe favourites. I have ſeen them ſometimes cloathed in expenſive garments, and adorned with trappings of conſiderable value, in defiance of nature and common ſenſe.[v]

Turn your eye to the gate of the manſion, and not a day ſhall paſs without ſeeing the naked as well as hungry children of the poor cotta-

[v] The reader may remember the various anecdotes, ſome capable of exciting laughter, others indignation, mentioned in the debates of the Houſe of Commons on the dog-tax bill. Few will be found, who, from their own obſervations, cannot verify them.

cottager, whom far leſs expence would feed and cloath comfortably. The performance of this taſk would reflect a different luſtre if tranſferred from the dog to the village pauper. I do not mean to accuſe the lap-dog-loving part of the preſent age (a numerous claſs) of want of charity; I muſt not doubt but they diſpenſe it liberally, but I accuſe them of tranſgreſſing nature's law, in conferring on the dog the attentions proper only for their own ſpecies. Let the ox have his hay in the crib; the horſe his oats in the ſtall; and the dog his proper food in his proper place, his cell or his kennel.

There is a ſpecies of French dog imported into this country, which for ſome time, for the beauty and length of the creature's coat, and its playful livelineſs, has become a particular favourite with many. This ſpecies is to be found now frequent even among the middling claſſes. While the ſpaniel, pointer, or greyhound lives in his kennel or cell, this little foreigner amuſes the family in the parlour, and has the privelege of dining there.

I have obſerved this poor animal doomed to great ſufferings to preſerve the whiteneſs of his coat. Once a week it was waſhed (not bathed)

bathed) with ſoap and water. Here was no great impropriety, but in what followed there was much to condemn. No ſooner had the maid performed the proper ablution, than it was carried immediately to a baſket prepared for the purpoſe, wrapped in blankets, with part of the head only left uncovered, in a cloſe and warm room, where it lay for the purpoſe of drying, in a degree of heat ſufficient to excite a fever. Such creatures, as it might be expected, became delicate and debilitated. I have been told of ſome whoſe ſagacity led them to diſtinguiſh this day of *ordeal* from the reſt of the week, and, dreading what they were about to ſuffer, would ſedulouſly watch a favourable opportunity to ſeek concealment, from room to room where they could find an entrance.

I would ſuggeſt to the poſſeſſors of theſe beautiful animals, that the mode of cleanſing here adopted is highly injurious to their favourites; and while it torments them by breaking down their conſtitutions, defeats, in a great meaſure, the end for which it was employed: for want of health will ſoon be followed by want of beauty. Where the animal pants with a fever weekly renewed, the parched

parched ſkin muſt wither that coat of hair on which they ſet ſo high a value.

But to return; in the management of dogs of all kinds, let their maſters guard well againſt infection. Let no attention be omitted, which circumſpection can ſupply, to obviate its generation in the dogs themſelves, and in their habitations; or its introduction by communication with others under diſeaſe.

The laſt rule which I ſhall lay down on this ſubject relates to quarantine, or the keeping ſeparate from the old pack new dogs, for a certain period, till their health be aſcertained. This has been found an uſeful practice, confirmed by conſiderable experience. One of the firſt ſportſmen now in England[w] has, for a ſeries of years, kept his kennel free from rabid infection by this means. Till this plan ſuggeſted itſelf his dogs frequently went mad. The time the animal is to be under judgment need not exceed three weeks; at the utmoſt four.

On a very probable eſtimate we may conclude, that where one dog generates the diſeaſe, many hundreds receive it by derivation.

So

[w] Mr. Meynell.

So widely indeed may it ramify by inoculation, that ſeveral months may elapſe before the infection from one ſtock be completely ſubdued. We have inſtances of its continuance for even nine months. A number of coincident circumſtances muſt concur to form the primary infection. They can happen but ſeldom; and happy this is for mankind! The inoculated diſeaſe ſpreads with rapidity. It is much more difficult to guard againſt the latter than the primary. A moment may communicate the one in ſpite of vigilance; but the other requires time to arrive at rabid ſtrength. By our mode of feeding, lodging them, &c. we have it in our power to prevent its generation; and by ſtrictly obſerving the rules recommended in theſe pages, we ſhall, I would ſay, almoſt to a certainty, obviate thoſe dreadful effects experienced from rabid virus in ſo many inſtances.

Worming of Dogs, as preventive of their becoming Hydrophobic, conſidered.

A Few words in the preſent day might ſuffice on this part of our ſubject. It might indeed be totally paſſed in ſilence, as a practice altogether nugatory, and generally now conſidered in that light. But the time is not long ſince a contrary opinion was held even by men of a ſuperior underſtanding. Among ſome however whoſe province is not peculiarly the ſtudy of medicine, this opinion ſtill holds its ground. For the ſatisfaction of theſe I ſhall enter a little into explanation, and point out the ſources from which this error has been derived.

Prior to the days probably of Pliny the younger, credulity had laid hold of this notion,

tion, as preventive of a malady which ſo often occurred. In a great part of his natural hiſtory he only collects together things he had either read of, or ſeen; and among theſe, it is but reaſonable to conclude, he had ſeen the practice of dog-worming. He has been however but ſhort on the ſubject; yet here, as in many other parts of his work, he is deciſive in his opinion, though erroneous: "*Eſt vermiculus in lingua canum, qui vocatur a Græcis Lytta, quo exempto infantibus catulis, nec rabidi fiunt, nec faſtidium ſentiunt.*"[x] Here is the whole paſſage, to which not only our forefathers, but ourſelves, have paid, even to the end of the eighteenth century, and in the face of phyſiology, implicit obedience, and given to it without farther examination, a ſtupid belief.

Some few however muſt be exempted from this charge, who have ventured to aſſert its inſignificancy. Among theſe James is to be reckoned. It is well known he was famous throughout Great Britain for his ſuppoſed knowledge of canine diſeaſes. After giving a deſcription of the manner commonly practiſed by

[x] Vide Plin. Nat. Hiſt. lib. 29, cap. 5.

by village dog-doctors, who, in conformity to this opinion, elevated the ſubſtance denominated a worm on the point of an awl, or ſome ſuch inſtrument, and thus extracted it from the tongues of puppies. But he expreſſly teſtifies, from his own experience, the futility of the operation, either in preventing the diſeaſe in queſtion, or of rendering them dull, mute, or unable to bite. "There is no worm in the part," (a very obvious truth to an obſerver) "I firmly believe, and conſequently none can be taken out." The operation makes their mouths ſore, and may prevent them from gnawing whatever they meet; and if any good be derived from it, it is the breaking them of this habit. But the puniſhment is far from proportioned to the offence; for the animal remains mutilated through life to obviate a trivial inconvenience.

If no benefit can be derived to ſociety from this operation, why inflict pain on our domeſtic companion, whoſe fidelity attaches him ſo cloſely to us? Nature forms nothing in vain; this organ muſt have been given for uſeful purpoſes to the animal, the loſs of which muſt be to him an evil. Two of the three pairs of glands deſtined for the ſecretion of ſaliva, have their

their ducts opening in the tongue, viz. the ſubmaxillary, which open on each ſide of the frœnulum, and the ſublinguals pouring forth their contents from a number of ſmall rivuli, or openings at the tip of the tongue. In extracting the ſubſtance denominated a worm conſiderable injury muſt be ſuſtained by theſe ducts, and the ſalival diſcharge thereby diſturbed, which muſt be ſeriouſly detrimental to the animal. We are not juſtified then in continuing this unneceſſary mutilation and cruelty, for we ſhall make it appear ſo in the inſtances now to be annexed.

Dr. James conſiders the ſubſtance extracted from the tongue as a *nerve*. Here however he is miſtaken, it wants even its ſimilitude. When cut out it contracts, and this is believed by the credulous bye-ſtander to be a proof of its animation and vermicular nature. A nerve when divided becomes ſomewhat elongated, and is pulpy and ſoft; but this, beſides retraction, is conſiderably hard.

Dr. Brodie differs from others in his opinion of it. He thinks it to be gland. On this ſuppoſition he has imagined, that there may be truth in the common notion, that wormed dogs do not run mad; or if they ſhould go mad, as obſer-

obſervation proves to be the caſe, they are thereby rendered incapable of communicating the diſeaſe.

Thoſe who ſupport the idea of its being a gland, argue, that it is neceſſary for the ſeparation of the poiſon at the mouth. If it be extracted, ſay they, the poiſon therefore cannot be communicated, becauſe the organ neceſſary to make the ſeparation does no longer exiſt. This, no doubt, would have been found reaſoning had the foundation been firm: but this happens not to be the caſe; the thing itſelf is not true: it is no gland. This part of the argument ſhould have firſt been well examined, and then there would have been more certainty of the ſecurity of the building, which, unluckily, for want of this precaution, tumbles at once into a ruinous heap. In the firſt place, it is not like any other gland in the body. No duct has yet been diſcovered going out from it, by which, like all glands, the excreted liquor is to be carried away. It becomes indeed the very eſſence of a gland to have a duct: this having none is ſufficient proof of its being no more a gland than a worm.

Morgagni, who has taken ſome pains in its inveſtigation, thinks it compoſed of tendon

and

and ligament, and hence denominates it *tendinous ligament.*[y] The naked eye indeed can diſtinctly trace theſe two ſubſtances, of which this eminent anatomiſt thinks it to be compoſed, ſeparately in a longitudinal direction, and parallel to each other.[z] The one appears clear, and ſemi-tranſparent: the other dark in its colour. The tendon ends with the body or bulky part: the ligament grows ſmaller, and leaving the tendon behind, runs out alone, in length near an inch, in one now in my poſſeſſion, and ſmall, like a fine thread, or rather hair, to connect itſelf with the ſubſtance of the tongue towards its root. What may be the real uſe of this little organ in dogs I ſhall leave to the determination of more accurate phyſiologiſts; but that it is for a different purpoſe than what many attribute to it, appears both a probable and rational concluſion.

There is an evident diſproportion between the cauſe and the effect which is ſaid to be produced, in attributing to the extraction of this little ſubſtance the prevention either of madneſs, or of the animal's incapability of biting

[y] Vide de Caus. & Sedib. Morbor, lib. 1, epiſt. 8, 35.

[z] Vide plate annexed.

biting when rabid: but with arguments alone I did not content myſelf. I was inſtigated more particularly to this by anonymous letters addreſſed to me, in attempts to refute my opinion on this head, which had been made known ſome time before.[a] I directed my inquiries therefore to the diſcovery of facts, and was fortunate enough to find a noted dog-wormer in this place,[b] who amply ſatisfied all my doubts, by poſitive examples within his own practice.

He wormed a dog for one Cutting, a butcher in this town. The dog not only went mad, but bit a cow, a gander, and a favourite ſpaniel of his own. The cow and the gander went mad ſoon after, and to prevent the ſame event in the ſpaniel he ſhot him.

Two other dogs which he had wormed alſo went mad, and both ran away (the dog we have already mentioned ran away) but he cannot aſſert whether they had bitten other animals. He wormed alſo another when it was a puppy of about four months old. It remained

[a] This controverſy was printed in the firſt edition of this work: to re-publiſh it now would be ſuperfluous.

[b] Ipſwich.

ed well till about three years after, when it went mad, ran away from its maſter,[c] and bit a great number of other dogs, ſeveral of whom went mad ſoon after.

We ſhall inſtance only two other caſes in his practice as recent occurrences, and all the circumſtances freſh in his mind. A dog that he wormed went mad, and bit ſeveral others; two of theſe had been wormed by him when young: they ſurvived the bite only about three weeks, dying of the malady contracted from the other wormed dog. One of theſe was the property of a Mr. Mayhew, then reſiding at Whitton, a village about two miles from Ipſwich: the other to a perſon at Bramford, about four miles diſtant. The firſt wormed dog which had contracted the diſeaſe, and communicated it by bite to theſe two, belonged to a baker in this town, named Clubbe. I am thus circumſtantial in order to give an opportunity of inquiry to ſuch of this neighbourhood eſpecially, as may ſtill remain unconvinced of the inutility of the practice.

Theſe facts are here eſtabliſhed on the ſureſt foundation of accurate obſervation, and faithful

c This happened only three months previous to the time of his giving me this narration.

ful relation. Another perſon in this neighbourhood informed me of his having a water dog wormed, and notwithſtanding which he went mad from the bite of a rabid animal. This is another proof; and certainly the whole are ſufficient for the refutation of this long-eſtabliſhed abſurdity.

I ſhall not intrude longer on the reader by recounting and refuting other ſuperſtitions, which time has not yet altogether eradicated, as they are of leſs moment. The above were thought moſt material from the influence they have not only over the conduct of the multitude, but even over the minds of perſons more liberally educated.

Explanation of the Plate.

FIG. I.

A A Part of the tongue of a dog; the under ſide turned upwards, to ſhow the *worm* in ſitu.

a The worm, as it appears through the cuticle.

f Its communication with the marginal line of the tongue.

FIG. II.

B B The tongue diſſected.

b The cuticle ſeparated and laid back, to ſhow the muſcle wherein the worm lies.

a a The worm raiſed from its ſituation, with its attachment to the muſcle.

FIG. III.

C The worm taken out.

c The tendinous part.

d The ligamentous.

e The ligamentous running out to a point, but which unites and mixes with the muſcular fibres, ſo as to be loſt among them.

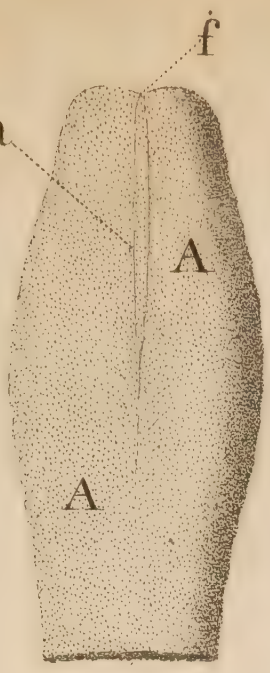


Fig. 1

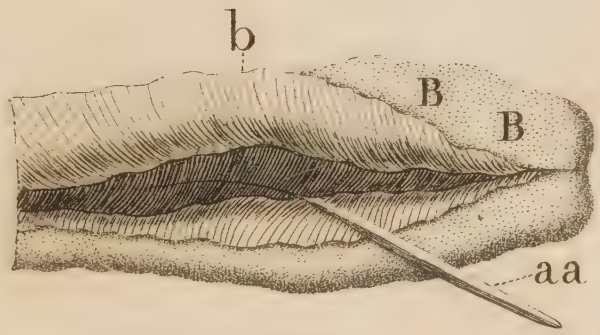


Fig. 2



Fig. 3

Flindell Sculp.

APPENDIX.

APPENDIX.

To Dr. R. HAMILTON, Phyſician, Ipſwich.

DEAR SIR,

YOU do me the honour to requeſt my opinions on the pathology of the Hydrophobia, and I could willingly communicate them to you, had I any to add to thoſe which you muſt have drawn from your own more extenſive reading and thinking on the ſubject. I had always believed in the doctrine of abſorption, as the mode by which this diſeaſe is communicated to the nervous ſyſtem: and as I found nothing in the publication of Dr. Meaſe to lead me from this opinion, I muſt of courſe have made ſome objections to the reaſon-

Dr. Meaſe ſuppoſes that the typhus and hydrophobic poiſons act by directly debilitating the ſyſtem; yet Dr. Beddoes gives an inſtance, where he himſelf ſaw a gentleman exhilirated by the contagion of the typhus fever:[f] and here is in Yarmouth one of the oldeſt practitioners of this place, who never viſits a patient with typhus fever, but he experiences, for ſome minutes after leaving the room, ſlight ſymptoms of intoxication. It is by no means an uncommon remark of the friends of a typhus patient, that they had never ſeen him in ſuch high ſpirits as he appeared to be only a few hours before he ſickened. Beſides the above proofs of the ſtimulant effects of the contagion of typhus fever, it may be aſked, whether a ſingle inſtance can be adduced of a recovery from typhus fever without ſome evacuation having been conſiderably increaſed.[g]

In

[f] Vide Beddoes on the Catarrh, p. 260.

[g] Though I am of opinion that typhus fever is always produced by ſtimulus, and of courſe that the debility is indirect, yet I am ready to admit, where the indirect debility is ſucceeded by profuſe evacuations, that then the diſeaſe will be brought to a ſtate of direct debility, and will from that time require only the ſame moderate doſes of medicines, as diſeaſes of original direct debility.

In diſeaſes of direct debility, as from loſs of blood, famine, &c. the ſmalleſt doſes of purgatives, opiates, emetics, &c. are too powerful in their effects. In the Hydrophobia the largeſt doſes of opiates, &c. will ſcarcely produce any of their accuſtomary effects; and in the Hydrophobia, as in typhus fever, there are many inſtances of the remarkable high ſpirits of the patients for a few days or hours before the commencement of the ſymptoms of Hydrophobia.[h]

Dr. Meaſe, to prove the influence of climate on the Hydrophobia, refers to the hear-ſay fact which is related by Dr. Gray, of a man dying in the Eaſt Indies, on the evening of the ſame day in which he had been bitten. I ſhall quote the whole of Dr. Gray's account, which is publiſhed in the Medical Commentaries.[i]

"Mr. Murray, who was formerly an officer in the Nabob's ſervice, has juſt now declared to me, that about three years ago, when at Madras, he ſaw a man brought into the fort raving mad. He had been bit in the morning by

[h] Vide Smith's caſe, at Acle; alſo Hogg's caſe, Med. Comment. D. ii. vol. 10.

[i] Vide D. ii. vol. 2, p. 315.

by a mad dog, and died in the evening of the ſame day, tearing every thing near him."

Though it is probable that a hot climate may accelerate the ſymptoms of Hydrophobia, yet ſurely the manner in which the above fact is recorded is no proof that the man died of an Hydrophobia. Under the abuſe of ſtramonium, bange,[k] moor man's toddy,[l] &c. it is not uncom-

[k] Bonge is an opiate made with a ſpecies of hemp, &c.

[l] What is called toddy in India, is the juice of the palmira trees, which is obtained in the following manner: Every evening the natives mount theſe trees, and cut off ſeveral of the branches, and faſten to each of theſe wounded branches large earthen veſſels, of the ſhape of cupping glaſſes. In the morning early they mount the trees again, and deſcend with the veſſels, which are by that time filled with a fermenting ſaccharine intoxicating juice, which is by no means unlike, either in taſte or effects, to the white champaign of the French, except in being rather ſweeter. Each tree will yield ſeveral quarts of this drink, which is drank both by the Europeans and natives; and it is a very productive article to the revenue of our India Company.

As this juice, before the influence of the ſun on it, is in a ſtate of fermentation, it becomes perfectly acid by noon, and is then ſold exceedingly cheap to thoſe who convert it into what is called moor man's toddy, which is made by the addition of chunam (calcined ſhells) jagara (palmira ſugar) and intoxicating vegetable productions. This moor man's drink is a very favourite one with the European private ſoldiers; and to it ſome of the moſt rapid cholera morbuſes and fatal fluxes, may often be aſſigned.

uncommon to find men in India ſo frantic, as to wound themſelves, or even thoſe who attempt to approach them; and to die in a few hours, from the drunkenneſs having induced either a cholera morbus, or that ſort of tetanic affection, which is commonly called cramp in India.

Under ſuch a ſtate of drunkenneſs he might provoke ſome dog to bite him, and might die: but as men in that country frequently die in a few hours, from the ſpaſms brought on by theſe intoxicating powers, it is ſtill a queſtion, by what proofs the madneſs of the dog was aſcertained; or whether the bite had any ſhare in cauſing the death of this man. The tetanus, which is excited by a wound, very ſeldom, if ever, comes on ſo ſoon as within twelve hours after the infliction of a wound: and there is not another fact of Hydrophobia to lead us to believe, that this was a caſe of Hydrophobia.

The other patient with Hydrophobia, whoſe caſe Dr. Gray has detailed, did not die till the fifth week from the time the patient was bitten; and therefore rather makes againſt the influence of climate on this diſeaſe.

Although I am very ready to acknowledge the action of the poiſon of a rabid animal on the

the nervous ſyſtem, and the ſimilarity of Hydrophobia to tetanus, yet I do not ſee that it neceſſarily follows, that an Hydrophobia, or even a tetanus itſelf, when produced from a wound, ariſes prior to an abſorption from the wound.

It is a well known fact to ſurgeons, that a tetanic affection from a wound very rarely commences for ſeveral days after the wound. Are we then to ſuppoſe, from the moment the wound was made, which excited the tetanus, that the abſorbents in and about the wound have loſt their action?

Where the wound has not been kept open by art, is there a well-marked caſe of Hydrophobia, where the ſymptoms of the diſeaſe commenced prior to the healing of the wound?

Can any wound or ulcer be healed, without the action of the abſorbent veſſels, which are ſituated in that wound or ulcer?

Modern phyſiologiſts in this country ſeem to agree, that no healing can take place until the abſorbent veſſels ſituated about the wound, are excited to action. Like the theory of Dr. Black on latent heat, you know, that this doctrine of Mr. Hunter upon the healing of wounds, is very generally underſtood in moſt

of

of the medical ſchools of Europe: and as I think it is very conciſely explained by Dr. Darwin and Mr. Adams, I ſhall tranſcribe a paſſage on this ſubject from each of theſe writers.

"When an abceſs is formed by a rupture of veſſels, the violence of the inflammation ceaſes, and a new gland ſeparates a matter called pus: at the ſame time a leſs degree of inflammation produces new veſſels, called vulgarly proud fleſh; which if no bandage confine its growth, nor any other circumſtance promotes abſorption in the wound, would riſe to a great height above the uſual ſize of the part. Hence the great art of healing ulcers conſiſts in producing a tendency to abſorption in the wound greater than the diſpoſition."[m]

"When a diviſion of any ſolid part on the ſurface of the body takes place, the moſt ſimple operation of nature is to form a kind of ſcab over it. By this means the whole is defended from the external air; the blood, or other interſtitial fluid is abſorbed, and the ſides unite by contracting cloſer to each other, or by the appoſition of new-formed ſubſtances, after

[m] Vide Darwin's Zoonomia, vol. 1, p. 410.

after which the ſkin recovering its ſmoothneſs, the ſcab falls off: but the injury may be of ſuch a nature, or the parts may be kept ſo long divided, as that the edges muſt die for want of a due circulation. The neceſſary conſequence of this is, that before any other proceſs can commence the dead part muſt be ſeparated, which can only be effected by the ſound part in contact with it being abſorbed."[n]

If the wound from the bite of a rabid animal always heals when left to itſelf, prior to the commencement of the ſymptoms of Hydrophobia, then before Dr. Meaſe can eſtabliſh his poſition, that this diſeaſe is communicated to the ſyſtem independent of the abſorbent veſſels, he muſt firſt diſprove the modern phyſiology on the healing of wounds. Having taken theſe liberties with Dr. Meaſe's publication, which is well entitled to the appellation of ingenious, I cannot conclude without obſerving, that the ſecond caſe of Hydrophobia, which is related by Dr. Shadwell,[o] has nothing in it to lead any medical man to believe

[n] Vide Adams on Morbid Poiſons, p. 88.

[o] Vide Mem. of Lond. Med. Society, vol. 3; alſo Appendix to Meaſe.

lieve that it was a caſe of true Hydrophobia. The ſymptoms of the patient, the early period at which theſe ſymptoms commenced from the bite, and his recovery, all tend to prove this to have been a caſe of diſordered imagination from fear.

This man bit his mother's head, and he bit ſeveral men, but none of them are reported to have ſuffered from their wounds. The dog that bit him was killed, becauſe he looked gloomy, had bitten other dogs, and was ſuppoſed to be mad: but no mention is made that any of theſe dogs became afterwards mad. The facts of Hydrophobia have taught me to believe we are at preſent without any other remedy for that diſeaſe, but the immediate deſtruction of the wound.

Under this belief I have meditated upon the maxim, *that a doubtful remedy is to be preferred* to none: and I think it is more juſtifiable, to attempt a remedy by a dangerous medicine in this diſeaſe, than in any other. But the ſymptoms of Hydrophobia ought unequivocally to be diſcriminated from the ſymptoms of the madneſs from fear, &c. before it can be lawful to hazard the life of a patient to the operation of a dangerous medicine.

As

As the prognoſis of an hydrophobic patient with me is death, you muſt not wonder at the deſperate appearance of ſome of the following queries:

1ſt. Does the Hydrophobia originate only in the dog kind?

2nd. If it originates only in this kind, what is the cauſe of it?

3d. Is it that he is more ſubject to ſtomach complaints than other animals?

4th. If he is more ſubject to ſtomach complaints than other animals, is it becauſe he perſpires leſs than other animals?

5th. Or from a dog having leſs perſpiration than other animals, does a greater quantity of poiſon paſs off from his lungs, than from thoſe of other animals; and that therefore his breath, under certain ſituations[p] and diet, imparts the poiſon

[p] That ſituations are favourable for the productions of ſome poiſons and not of others, the Iſland of St. Helena is a ſtriking example. This iſland is ſituated in the 16th degree ſouth latitude, many miles from any continent; is about 21 miles in circumference, and contains near 1000 inhabitants. The ſmall pox has never been ſeen in this iſland, but the meaſles very frequently break out among the inhabitants, at times when they have no opportunities of communicating with ſtrangers: and the inhabitants go ſo far as to aſſert, that if any of them viſit England,

poiſon of Hydrophobia to his ſaliva and teeth?

6th. As felons[q] by naſtineſs, &c. ſeem often to have generated poiſonous effluvia round their bodies ſo gradually, as not to have ſuffered any of the ſymptoms of jail fever; and yet to be able to communicate this diſeaſe to other men, may not a dog, under certain ſituations and diet, without having ever ſhewn (or

 per-

land, and receive the ſmall pox, either by inoculation or otherwiſe, the diſeaſe always proves a very mild one with them. In the year 1785 I arrived in that iſland, where I ſaw ſeveral children labouring under the meaſles, and received this curious piece of information from the inhabitants, and the ſurgeon general of the iſland.

[q] Vide Sir John Pringle's Account of the Fatal Trials at the Old Bailey, in 1750, (p. 291) where the Lord Mayor, an Alderman, and two Judges, and Counſel and Jurymen, amounting to forty, who ſat on the left ſide from the felons, received the infection of fever, and died: while the Recorder and the Lord Chief Juſtice, and the Jury, who ſat on the right ſide, eſcaped. The ſtream of air from the windows directed the effluvia of the felons from the right to the left ſide of the houſe; yet it does not appear that any of theſe felons had laboured under the ſymptoms of fever. By being gradually habituated to contagion, medical men and nurſes often paſs through a long life, without having experienced more than very ſlight ſymptoms of fever. They may be compared to chewers of opium, who by being gradually accuſtomed to that ſtimulus, are able to reſiſt the effects of doſes, which would prove fatal in a few hours to many men.

perhaps ever afterwards ſhowing) any of the ſymptoms of Hydrophobia in himſelf, be able to communicate the ſymptoms of Hydrophobia to another dog?

7th. If the painful ſenſation of the œſophagus or ſtomach, be univerſal in Hydrophobia, and the diſſections of ſubjects after death, in this diſeaſe, give the ſigns of local affection, ought not the cure of this diſeaſe to be directed entirely to the ſtomach?

8th. If the tetanic affections of the Hydrophobia are from increaſed ſenſibility of the ſtomach, ought not the cure to be attempted, by deſtroying this ſuperabundant ſenſibility of the ſtomach by ſuch means as have been found to deſtroy diſeaſed ſenſibility in other parts?

I ſhould not heſitate to recommend the trial of the Tanjore arſenical pills, which have hitherto neither been attended with any dangerous effects, nor failed in the cure of the poiſon from venemous ſerpents, either in brutes or men.[r]

With

r Vide Ruſſels on the ſerpents of India.

With every wiſh for the ſucceſs of your endeavours to illuſtrate this diſeaſe,

I remain,

Dear Sir,

Your obedient humble ſervant,

THOMAS GIRDLESTONE.

Yarmouth, Dec. 23, 1796.

To Dr. R. HAMILTON, Phyſician, Ipſwich.

DEAR SIR,

I Received with no ſmall degree of pleaſure the propoſals lately ſent to me, ſignifying your intention of publiſhing ſoon a ſecond edition of your excellent work on Hydrophobia, and the means of preventing the effects of the poiſon of rabid animals. Your great experience and intercourſe with medical men of eminence ſince the appearance of the firſt edition, muſt have furniſhed you with ample opportunities of collecting uſeful information on this important and highly intereſting ſubject; and muſt neceſſarily render the work a valuable acquiſition to the public, as well as to the medical practitioner.

Since my reſidence in this country two caſes of Hydrophobia have fallen under my immediate

diate obſervation. In one of theſe I ſaw the origin, progreſs, and fatal termination of the diſeaſe: in the other, the ſymptoms had made conſiderable progreſs before I viſited the patient. The moſt remarkable circumſtances attending the former I now ſend to you; and I preſume Mr. Edwards[s] has tranſmitted to you the particulars of the ſecond.

I ſhould be exceedingly happy, were I juſtified in encouraging the belief, that they furniſhed any thing tending to throw light either on the pathology or cure of this moſt formidable of all human maladies. I fear however they ſerve only to afford ſtill farther evidence of the futility of our art in combating its deſtructive ravages. Some particulars however connected with them ſeem not altogether unworthy of attention.

Both the men were bitten by the ſame dog, and on the ſame morning (Oct. 22, 1791), but the effects of the poiſon diſcovered themſelves at very different periods.

Francis Tweed was taken ill early on the morning of the 11th of Nov. following, twenty days

[s] Surgeon at Long Melford.

days after the accident, and he lived only thirty hours.[t]

Jeremiah Groves was attacked early on the 27th of Jan. 1792, ninety-ſix days after the bite; and died on the morning of the 29th, forty-nine hours after the ſymptoms commenced.

The great diſproportion between the periods of attack, and duration of life in theſe two caſes, ſeems worthy of inquiry.

The influence of peculiarity of conſtitution on diſeaſe, as well as in determining the period of action of certain poiſons, and other morbid ſubſtances on the living body, is ſufficiently known: yet making every allowance for this, in theſe inſtances, there ſeem to be other circumſtances, connected with the application of the poiſon, highly deſerving the attention of the medical practitioner.

Francis Tweed received ſo many lacerated wounds on the throat, neck, and under lip, as to require the aid of ſuture to bring the irregular and divided ſurfaces in contact. The parts were, ſoon after the accident, diligently waſhed by a ſkilful ſurgeon, for a long time, with

[t] Vide annexed caſes.

with a ſaturated ſolution of ſalt in water: they were afterwards dreſſed with epiſpaſtic ointment, and they healed as readily as common wounds do. Notwithſtanding theſe precautions, the virus ſhewed its full effect in twenty days, a period conſiderably within the uſual time of its appearance; and the diſeaſe terminated ſooner than in general happens.

Do not theſe facts lead to the following concluſions?

That the extenſive ſurface to which the poiſon was applied, the vaſcularity of the parts, the lacerated wounds, and their vicinity to the organs more eſpecially affected in Hydrophobia, had conſiderable influence, not only in accelerating the effects of the virus, but in rendering the diſeaſe more violent alſo. If this be admitted, it ſuggeſts an uſeful caution to the practioner to apply with the more diligence and attention the means of prevention under ſimilar circumſtances.

Jeremiah Groves received only a ſuperficial ſcratch, ſo as ſcarcely to draw blood, on the breaſt and neck. Ninety-ſix days elapſed before he began to complain, and he lived forty-nine hours under the diſeaſe. Do not theſe circumſtances tend to confirm the inference de-

duced in Tweed's caſe? They ſeem likewiſe to favour an opinion that has, I underſtand, lately been advanced and ſupported by ſome, viz. that this, and ſome other poiſons, do not exert their deleterious effects on the conſtitution in conſequence of abſorption, but directly on the parts to which they are firſt applied, and from thence communicated through the medium of the ſenſible and irritable fibre, to the whole habit, or to particular organs. I have not had the good fortune of peruſing any of the publications containing the arguments adduced, with the view of eſtabliſhing this theory; but the reflections, and attentive conſideration of the ſubject have given riſe to induce me to think it liable to fewer objections than that which is generally received, and which you adopted in your former edition.

I preſume it is to this doctrine you allude, in ſpeaking of "the difference of opinion on the pathology entertained in Dr. Meaſe's Inaugural Diſſertation, &c."[u] On receiving your letter I commiſſioned my bookſeller to ſend to town for a copy; but the anſwer returned him

[u] Addreſs to the public, with propoſals for the work.

him was, that it was out of print, and could not be procured.

The effects frequently obſerved to ariſe in conſequence of a variety of local injuries and irritations, more eſpecially of lacerated, contuſed, and punctured wounds, are in many particulars analogous to thoſe produced by the virus of rabid animals; yet it will ſcarcely be ſaid, that either tetanus, or any of its modifications or varieties, are the conſequence of the abſorption of any noxious ſubſtance, but irritation.

In many diſeaſes we have the cleareſt evidence of the moſt violent effects ariſing, even in diſtant parts, from local irritations. In many inſtances of inflammation, eſpecially in whitlows, in many ſlight wounds, in ſmall punctures, even from needles, pins, or thorns, one or more lymphatics may often be traced in the form of ſmall hard chords, or red lines, running from the affected parts to the neighbouring and diſtant glands, where pain, ſwelling, and inflammation, often greater than of the original affection, are produced.

The blood veſſels too may often be perceived running, in all directions, a conſiderable way from the inflamed point: but in either caſe does

this ariſe from abſorbed virus? I preſume not. Is it not owing to the irritation applied to the extremities of the veſſels propagated along their courſe to the more diſtant parts? The blood veſſels, more eſpecially their capillary extremities, and the lymphatics, are endowed with a high degree of ſenſibility and irritability; and from their intimate connection in their whole courſe with the muſcular irritable fibre, by means of minute veſſels and nervous filaments, are conſequently well adapted to convey irritations to diſtant parts.

If therefore it be admitted, that we have the cleareſt demonſtration of diſtant parts ſuffering violently from irritation alone, is it not more probable, that they do ſo in every inſtance, than from abſorption of acrid virus, of which we have no poſitive evidence in any caſe?

That a conſiderable quantity of variolous matter is generated on the ſurface of the body, in conſequence of the fever ariſing from the ſmalleſt particle of it applied to any part, is no argument, in my opinion, in favour of abſorption; for no proofs have as yet been adduced of its aſſimilating a certain portion of the fluids to its own nature, as is generally imagined.

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It is much more likely, that as by its irritation it produces general fever, ſo it alſo communicates the diſpoſition to the veſſels on the ſurface to this peculiar ſecretion. The ſame reaſoning applies to the venereal poiſon, and to various other ſubſtances applied to the ſurface. Moreover, it does not appear that the blood, or other juices are capable of conveying what are called *ſpecific* diſeaſes, which would doubtleſs be the caſe if the theory of abſorption and aſſimilation were juſt. It ſeems really inconſiſtent with the laws of the animal œconomy, and more eſpecially thoſe of the vaſcular ſyſtem, that a poiſonous ſubſtance ſhould remain dormant and inactive in the body for weeks, and even months, without inconvenience to any part; yet ultimately ſhew itſelf with ſuch deſtructive fury. It is well known, that from the ſupply perpetually making from the blood, in the formation of muſcle, bone, ligament, and cartilage; and in the various ſecretions and excretions; and the correſponding addition made to it by the food taken into the ſtomach, the vital air received into the lungs, and, under certain circumſtances, from the abſorption by the ſurface, the circulating maſs is perpetually undergo-

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ing a change of waſte and renovation, ſo that the blood contained in the vaſcular ſyſtem when the accident happened, would ſoon be completely exhauſted: and from experiments and calculations that have been made, this would moſt likely happen, even within the ſhorteſt period the rabid poiſon exerts its force on the habit. Hence it is reaſonable to infer, that any noxious ſubſtances entering the circulation muſt, on the ſame principle, be thrown out alſo, unleſs it be proved, that after being taken up they are again depoſited in the parts on which they ultimately produce their effects, where they remain dormant until thrown into action by ſome exciting cauſe. But ſuch an idea ſeems to have neither analogy, nor even probability to entitle it to any countenance. Is it not probable, that if it were abſorbed it would ſhew its effects ſoon after it came into contact with the muſcular fibres of the heart, or thoſe of other parts, as we find is the caſe on the introduction of a variety of other ſubſtances into the circulating maſs?

I not only aſſent to Mr. J. Hunter's idea of its remaining in the part till within a ſhort period of its action, but that it either never goes beyond it, or if it does, that it is again diſ-

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charged, without injury, to any part or organ. When we ſee the lymphatics taking up with avidity, and often very quickly, great quantities of extravaſated blood and ſerum, even bone itſelf, or any ſubſtances coming in their way, why ſuppoſe ſo long a ſuſpenſion of their functions with regard to this poiſon? Were attention to be paid to the parts bitten, it would, I am perſuaded, invariably be found, that the firſt effects of the poiſon diſcovered itſelf in them; that the pain darted not ſolely in the courſe of the lymphatics, as the advocates of abſorption will have it, but in the direction of the muſcular fibre alſo, to the parts chiefly affected; but from our generally overlooking faint or weak impreſſions while ſtrong ones are preſent, theſe may very readily eſcape notice. In the two caſes which fell under my obſervation, this was moſt unequivocally the caſe; and many authors who have treated of the diſeaſe, have mentioned the itching and pain of the parts bitten, having either preceded or accompanied the firſt attack; and of the wounds which had completely cicatriſed, breaking out afreſh. If the poiſon had been taken up into the habit ſome weeks or months before, ſurely no veſtiges of

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it would remain in thoſe parts, and conſequently no inconvenience would be felt in them more than in any others.

I am aware it may be aſked, if it acts by irritation, why, on the ſame principle, does it not ſhew its effects immediately?

In anſwer to this there appears no difficulty in obſerving, that the analogy in both caſes by no means applies; that other irritations do not produce their effects immediately, nor even ſo ſoon as this virus in ſome inſtances does. Tetanus, or locked jaw, often does not appear for many days after its cauſe has been applied. In five inſtances which have fallen under my obſervation the ſymptoms did not come on till the tenth, twelfth, and fourteenth day; and they are ſometimes protracted conſiderably beyond that period, caſes having occurred, where the wounds had completely healed up before any inconveniences were experienced. In four of theſe the diſeaſe ſeemed to ariſe from comprehending a large portion of muſcle, and the divided extremity of the large crural nerve in the ligature, in taking up the femoral artery, in amputation of the leg above the knee, according to the old method. In the other, it was after the amputation of a

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ſchirrous tumour from a female breaſt, for which no reaſon could be aſſigned, the operation having been well performed, and every attention paid to the patient afterward. It may appear ſingular, that in all theſe, except the laſt, appearances were extremely favourable, and the pus of a good colour and conſiſtence for ſeveral days, which ſeems, in my opinion, to give force to the arguments advanced in favour of the theory of irritation. Inſtances perpetually occur of the moſt violent whitlows and inflammations, and ſuppurations ariſing ſeveral days, even weeks, after the cauſe which produced them, probably the prick of a pin, or thorn, had been applied. A caſe of this kind occurred lately, where the firſt joint of the index finger became in conſequence carious, and caſt off.

From what has been advanced, I would by no means be underſtood to infer, that the rabid poiſon, and many other ſubſtances, as well noxious as ſalutary, may not be abſorbed in the manner commonly imagined. I am perfectly aware of the contrary. I only contend, that when this happens, if they do not ſhew their effects within a much ſhorter time than the rabid poiſon has been known to act, they

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are, agreeable to the laws of the circulating ſyſtem, again thrown out of the body, without injury, to any part.

Mercury, and moſt probably opium, afford examples of this; for they may produce their effects in either way. The former ſeems in general to act on the ſalivary, biliary, and pancreatic ſecretions, in conſequence of being taken up by the lymphatics, or by the lacteals; yet thoſe caſes on record, of ſalivations having ariſen from the ſmalleſt quantity of red precitate applied to a chancre, lead to the preſumption of its acting by irritation alſo. Although opium in general leſſens ſenſibility and irritability, by entering the circulation, yet it ſeems capable of exerting its anodyne qualities, without being imparted to the blood.

If the analogy of other poiſons be allowed to have any weight, it ſeems to give countenance to this theory, while it militates againſt that of abſorption. The poiſon of the rattle, and other poiſonous ſnakes; of the ſcorpion and centipes; of the bee, waſp, and hornet; of the ticunas; of the nettle, and many other animal and vegetable ſubſtances, act, not in conſequence of abſorption, but immediately on the living irritable fibre; and the effects

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of ſome of them are very quickly propagated to the whole body. I am aware that this is contrary to the inference deduced by that eminent philoſopher, and accurate experimentaliſt, the Abbe Fontana, after ſacrificing ſome thouſands of animals in proſecuting his inquiries. But the ſingle experiment of Dr. Girtanner, which was conceived in a truly philoſophical ſpirit, puts the matter beyond all controverſy. He found that in frogs, which live a long time without the heart, and after they have been deprived of all their blood, theſe poiſons produced exactly the ſame effects as before.

It is neceſſary, ſay the advocates of abſorption, that the variolous and venereal virus ſhould remain for a certain time *on* or *in* the parts to which they are firſt applied, and there produce *ſpecific* inflammation, and *ſpecific* pus, in order to produce their reſpective diſeaſes; that it is not the matter immediately introduced, but that formed in the part in conſequence of this *ſpecific* inflammation that is abſorbed. What a circuitous way of accounting for phœnomena for which ſo ready an explanation ſeems to preſent itſelf! Is it not more natural and conſiſtent with the laws of

the animal œconomy, more eſpecially of ſenſation and irritation, to ſuppoſe that, like many other ſubſtances, a certain time elapſes before they produce the local irritation which muſt neceſſarily precede the general affection?

That the rabid poiſon ſhould, in ſome inſtances, remain ſo long inactive in the part ſeems, at firſt ſight, ſingular; but when it is conſidered, that the operation of various ſubſtances on the living body, eſpecially the occaſional cauſes of many diſeaſes, are influenced by ſo many local circumſtances; and that ſcarcely any two ſubſtances in nature have a determined period of action, our ſurpriſe will, I preſume, leſſen in a conſiderable degree. Beſides a variety of cauſes, ſuch as violent exerciſe, intemperance, exceſſes of every kind, or any cauſes tending to excite the action of the heart, or to produce inordinate ſenſibility or irritability, or the reverſe of all theſe, will have conſiderable influence in accelerating or retarding its progreſs. May not the ſubjects of the caſes alluded to be quoted as furniſhing examples of this?

If the view in which I have conſidered the pathology of this diſeaſe be founded on ſound and rational principles, and will ſtand the teſt

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of farther inveſtigation, it ſuggeſts one of the moſt important practical innovations that has ever been thought of; and it holds forth to the patient ſources of conſolation which no theory hitherto advanced will admit of. The inference is obvious. If the parts bitten be removed or deſtroyed at any period prior to the attack of the dreadful ſymptoms, it appears highly probable theſe may be entirely prevented; and as no medicine hitherto adminiſtered has had the ſmalleſt effect, either in mitigating their violence or in checking their ravages, our attention ſhould the more particularly be directed to the means of prevention.

I would therefore moſt earneſtly recommend the deſtruction of the parts, by means of the liquid cauſtic alkali,[v] or a ſtrong ſolution of common cauſtic in water, in preference to exciſion or any other means, at any ſubſequent period after the bite, even after the ſymptoms of Hydrophobia had commenced. But when this laſt were the caſe, I would adviſe the addition of a deep inciſion to be made between the parts bitten and thoſe more eſpecially affected,

[v] Aqua kali pur. or lixivium ſaponarium.

fected, ſo as effectually to cut off the communication between them. A ſimilar practice, when adopted early, has ſucceeded in ſome inſtances of tetanus; and every thing which gives the moſt diſtant probability of ſucceſs ſhould be tried in the diſeaſe in queſtion. Deſtroying chancres that have appeared ſeveral weeks after impure coition, by means of cauſtic, or removing them with the knife has, in many inſtances, proved a radical cure; a ſufficient proof, that the virus remained in the part, not having entered the habit. The ſame has ſucceeded in preventing ſmall pox, when done within the third day, the period at which the progreſs of the weak irritation ſeems to commence; or, according to the eſtabliſhed theory, when abſorption begins; and I truſt the ſame will be found to ſucceed in obviating the effects of the rabid virus at a much later period than has been imagined.

Should you think theſe few hints worthy your notice, you may uſe them at your diſcretion; and wiſhing you, dear Sir, every poſſible ſucceſs in your preſent undertaking, believe the ſincerity with which I am your's,

L. MACLEAN.

The

The Reader ſhall be now preſented,

1ſt. With ſome caſes ſent me by correſpondents, not hitherto publiſhed.

2nd. A few caſes publiſhed for the firſt time in the former edition of this treatiſe.

3rd. Caſes collected from various authors, and epitomiſed, preſerving only the moſt material circumſtances.

CASE I.

Communicated by Dr. Maclean, Phyſician, at Sudbury.

IN the afternoon of the 27th of Jan. 1792, I was deſired by Mr. Clerke, an ingenious ſurgeon of this town, to viſit Jeremiah Groves, a labouring man of the pariſh of Ballingdon, in Eſſex, of whom the following account was given me---That the preceding evening he indulged freely in the uſe of ſtrong beer, with ſome

ſome of his fellow labourers; that early next morning he went to work as uſual, but that complaining of general languor and uneaſineſs, with ſoreneſs and rigidity about the neck, throat, and one ſide of the face, which he attributed to his laſt night's debauch, he was obliged to return home early in the forenoon; that he went to a neighbouring alehouſe, and called for ſome beer; that on attempting to drink, the hand ſeemed to convey the liquor with ſome reluctance to his mouth; and that he had ſome difficulty in ſwallowing. Theſe circumſtances, and the recollection of his having been bitten by a mad dog ſome weeks before (the 22nd of October), led to the apprehenſion of his labouring under incipient ſymptoms of Hydrophobia; in conſequence of which Mr. Clerke was deſired to ſee him.

I found him in bed, perfectly compoſed and collected, and, as he ſaid, free from any complaint. The general aſpect of his countenance however was far different from that of a perſon in perfect health. His face was fluſhed; his ſkin warmer than natural; his pulſe full and 96 in a minute. He was of a ſtrong robuſt habit, and about 40 years of age. He readily agreed to drink any thing; but

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while ſome liquid was getting ready, though in another apartment, he diſcovered evident ſigns of emotion and uneaſineſs, which increaſed on the nurſe's entering the room with it. He readily took the cup, and fixing his eyes earneſtly on it, ſighed frequently while he held it in his hand. Some perſuaſion was neceſſary before he drank its contents, which he at length did very haſtily, and with ſome degree of pain.

Deſirous that every thing poſſible might be done for his relief in ſo hopeleſs a ſituation, a conſultation of all the medical men in the town was deemed adviſeable. We aſſembled at ſix o'clock in the evening.

From the fulleſt conviction of the inefficacy of all the means commonly reſorted to in ſuch caſes, I ſuggeſted this as a fair caſe for the trial of a new remedy, and propoſed one of which I had been lately informed by yourſelf,[x] and which had been *reported* to you to have been ſucceſsful in one inſtance.[y] This was the oil bath, and the external

[x] The author.

[y] This caſe was ſoon after publiſhed by Dr. Shadwell, in the Memoirs of the Medical Society of London, vol. 3, and is now generally known.

ternal and internal uſe of oil. My propoſal was readily acceded to, and the following plan was determined on, viz. to take 16 ounces of blood immediately from the arm; to rub the external fauces, throat, the ſide of the neck chiefly affected, and the cheſt, for half an hour with warm oil, and to repeat the frictions every hour; to give him four ounces of ſweet oil every four, and two grains of opium every two hours; to rub ſix drams of ſtrong mercurial ointment on the inſides of the thighs evening and morning, and to immerſe him in an oil bath, about blood warm, as ſoon as it could be got ready. His attendants were rigidly enjoined to keep him as quiet as poſſible; to exclude the light from his apartments; to let him have his medicine out of a wooden dark-coloured veſſel; and bread moiſtened with liquids, inſtead of liquids alone. Theſe injunctions were faithfully attended to, except his being kept ſtill and quiet; for a number of perſons, prompted by curioſity, crowded into his chamber, and diſturbed him much.

We met again at nine o'clock the following morning, and were highly gratified to find the diſorder had as yet made but ſlow progreſs. He had no ſleep, though he took eight

grains

grains of opium ſince our viſit; but he was in general ſtill and compoſed, except when he began to doſe. He had taken a pint and half of oil, and it ſeemed to agree well with him. He ſighed more frequently, and was ſenſibly more agitated on the ſight of the oil, or any other liquid. More perſuaſion was neceſſary before he drank any thing: he ſwallowed more haſtily, and with more pain than before. Solids were ſwallowed with more eaſe than liquids. His eyes were ſomewhat inflamed; but his face was leſs fluſhed than the preceding evening. At intervals, when not diſturbed, he lay quiet and compoſed, without much apparent uneaſineſs. His pulſe was 96, and ſoft, with occaſional intermiſſions. No thirſt; tongue clean; body regular; and appearance of the blood natural. No alteration was made in any reſpect in the plan originally adopted.

My extreme anxiety for the relief of this unfortunate man, and for the ſucceſs of this new remedy, from which I could not but encourage ſome expectations, induced me to viſit him frequently in the courſe of the day. Towards the afternoon the progreſs of the ſymptoms was too obvious not to be readily diſcovered. When talked to he was more hurried

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and agitated; and he expreſſed extreme anxiety for the bath. He imbibed an idea he was to be ſmothered between beds, and in the moſt earneſt manner entreated us not to ſhorten his ſufferings in this manner. He ſighed much more frequently, and before he drank any thing there was a quick ſucceſſion of theſe. In the evening the ſenſibility of the mind to all external objects was increaſed to an inordinate degree. He anſwered haſtily to any queſtions that were aſked him; and all the motions and actions of the body were performed in the ſame hurried convulſive manner. Even when left alone, and not talked to, he would frequently ſtart up in, and ſometimes jump out of bed. He talked inceſſantly to his attendants in a manner ſtrongly expreſſive both of his mental and bodily ſufferings. The ſighing was now converted into a rapid ſucceſſion of ſtrong convulſive inſpirations and expirations, ſimilar to thoſe obſerved on going into a very cold bath. He made frequent violent efforts to expel the viſcid and ropy ſaliva, which adhered firmly to the throat and fauces, and which was extremely offenſive to him. He had great anxiety about the præcordia, which together with the ſighing from the beginning,

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and ſome other ſymptoms, clearly ſhewed, that the muſcles ſubſervient to reſpiration, as well as thoſe of deglutition, were in a great degree affected. The ſubſequent ſtages of this melancholy caſe preſented nothing that is not found in many others on record. A minute detail of the ſymptoms therefore is unneceſſary. I was ſurpriſed to find any uneaſineſs was perceived on the firſt attempt to ſwallow, as this does not happen in general until the muſcles of deglutition have been firſt thrown into action by one or two attempts; but in this my information might have been incorrect.

Every thing was regularly perſiſted in as before; and though every effort was made, yet it was eleven o'clock at night before the bath was ready. When deſired to prepare himſelf for it, he jumped up immediately out of bed, and hurried to the caſk in which the oil was contained. His reſolution however ſeemed to forſake him on the ſight of the liquid, and he diſcovered extreme reluctance, horror, and anxiety on entering the bath, more eſpecially as he ſunk in it, and the oil approached his cheſt and neck. He earneſtly entreated us to remove him; and though the

the moſt alluring proſpects of ſpeedy relief were held out to him, and though I aſſiſted others in forcibly ſecuring him in it, yet he could not be prevailed upon to remain more than five minutes in it. He at length made ſo violent an exertion as to ſpring at once out of the caſk into the bed, an exertion which in health he could ſcarcely have been equal to. It might literally be ſaid, that he ſlipped through our fingers. From this time to the period of his diſſolution, at five o'clock the following morning, he enjoyed not the ſmalleſt lucid interval.

The melancholy and truly diſtreſſing picture the laſt ſtages of this caſe exhibited to our view, was ſuch as language is inſufficient to convey a juſt idea of; but ſuch as muſt ever remain deeply impreſſed on the minds of thoſe who witneſſed it. He was ſenſible to the laſt. He had none of the involuntary diſcharges that ſometimes occur in this diſorder.

It may not be improper to obſerve, that for ſeveral days after attending this man, I had a moſt diſtreſſing oppreſſion about the præcordia, which cauſed frequent ſighing, ſimilar to that with which he was affected; and my nights were extremely reſtleſs and diſturbed.

This

This caſe adds one to the many ſimilar inſtances on record, of perſons falling ſacrifices to their credulity, by miſplaced confidence in boaſted ſpecifics: for this poor man inſtead of applying to a ſurgeon, went to a farmer at ſome diſtance, and uſed for ſome time one of theſe ſecret remedies; and ſo convinced was he of its ſpecific powers, that when I aſked him ſome queſtions about the bite, he ſaid, "he was ſure his complaint could not be from that, as he had been already cured." Nothing had been done to the wounded parts, which were very ſuperficial, and might eaſily have been removed or deſtroyed, and this man's life, beyond a doubt, ſaved. That valuable lives ſhould thus be ſacrificed is an evil of the firſt magnitude; and it is earneſtly to be wiſhed, this may attract the attention its importance demands. Accidents of this deſcription ſoon circulate in the neighbourhood where they happen, and inſtead of ſuffering ſuch as may unfortunately be bitten to be lulled into fatal ſecurity by the promiſes of impoſtors, if the magiſtrates, or the gentlemen and clergy to interpoſe their friendly advice, by taking care that the proper means of prevention, on which only any reliance is to be placed, were

prac-

practiſed under the direction of one or more reſpectable ſurgeons, a calamity the moſt formidable in its aſpect, and fatal in its conſequences, to which the human race is liable, might, I am fully perſuaded, in every inſtance, be prevented. On occaſions of this kind every medical man of humanity would cheerfully lend his aſſiſtance; but unleſs applied to, his voluntary interference might be conſtrued by the lower claſſes into intereſted views.

It may be ſaid, that this caſe affords an inſtance of the unſucceſsful exhibition of oil; that little reliance is to be placed on it; that Hydrophobia ſtill continues to be, as it has hitherto been, the *opprobrium medicorum*. I own I had formed high expectations from it, and my diſappointment on its failure was the greater; yet it is but juſtice to Dr. Shadwell to declare, that the fatal termination of our patient's caſe ſeems by no means to juſtify the above inference. It could ſcarcely be ſaid to have a fair trial. Opium and mercury were adminiſtered at the ſame time, which we are certain have failed as often as they have been uſed. I apprehended they have done more; that they have been productive of miſchief alſo. When opium is given in very large doſes,

doſes, and neither procures ſleep, nor relieves pain, it generally diſorders the habit in a great degree, producing head-ach, delirium, fever, and ſometimes convulſions. Mercury in large quantities unleſs it relieves, generally aggravates the evil it is intended to remove. In the preſent inſtance I could not help thinking it did harm. We ought to have truſted ſolely to the oil. Other circumſtances too contributed to defeat our views. The number of perſons conſtantly admitted into the patient's room, and the noiſe kept up about the houſe, diſturbed him exceedingly. The bath was uſed at a time when no relief could be looked for from any remedy.

If a caſe of Hydrophobia ever fell under my care again, I ſhould truſt entirely to the internal uſe of oil, and the oily frictions (the bath being liable to numberleſs objections), and I would adviſe them at longer intervals, of four hours at leaſt, it being of the greateſt conſequence to keep the patient quiet, in order, if poſſible, to procure ſleep.

CASE

CASE II.

Communicated by Dr. Maclean.

TWO boys (brothers) were bitten at Colne, in Eſſex, about nine miles diſtant from Sudbury, at eight o'clock the ſame morning, doubtleſs by the ſame, a large black Newfoundland dog. One of the boys (Middleton) aged 14, was bitten in the under lip, completely through, and received ſeveral ſuperficial ſcratches in the face. About eleven o'clock the ſame day, Mr. Raynbird, ſurgeon at Colne, who favoured me with this account, ſaw him. The wounds were well waſhed with cold water, and dreſſed as common wounds. The ſame evening he began to take the Ormſkirk medicine; and afterwards took a noſtrum recommended by a farrier; and he has remained in perfect health ſince that period.

The other brother aged 12, was bitten in the hand, and the wound was treated in the ſame manner. He took the Ormſkirk medicine, but not the farrier's noſtrum. He was taken ill on the morning of the third of November fol-

following, twelve days after the accident. Mr. Raynbird ſaw him at noon. He was bled and ordered the Tonquin medicine. He died on the ſixth; conſequently the farrier had the credit of the cure in the other caſe.

Farther Particulars of the ſame Caſe, communicated by Mr. Raynbird to the Author at his Requeſt.

"I find, by referring back to my book, that he received the bite on the 22nd of October, and the firſt appearance of the diſeaſe was on the 3rd of November. I do not recollect that he complained of any particular pain in the wound, which was large and deep, in the fleſhy part of the hand, and very little diſpoſed to heal at the commencement of the diſorder. On viſiting him the ſecond day of his illneſs, I found him ſitting by the fire; and on opening the door at my entrance, he ſcreamed out moſt violently. Apprehending the cauſe, (viz. that the cold air affected him) I ſhut it as quick as poſſible; upon doing ſo he became quite calm. During the paroxyſms his eyes looked very wild, but when that was over I obſerved

nothing particular in them. The laſt two or three days he vomited up a great deal of ſlimy mucus. The firſt three or four days his tongue was white and moiſt; the latter part of the time it turned brown and dry. Great difficulty in ſwallowing continued the whole time.

"I gave him immediately the Tonquin medicine, with muſk, &c. but found no mitigation of the ſymptoms from it. He lived to the 8th of November, when death put an end to his ſufferings."

CASE III.

Communicated by Dr. Maclean.

Several others were bitten by the ſame dog, near Kelvedon and Coggeſhall in Eſſex, and died in conſequence. Mr. Godfrey, ſurgeon at the latter place, writes to me, ſaying, he attended two girls about nine or ten years of age. One was bitten in the cheek, and was taken ill the end of the third week: the other was attacked between a month and five weeks from the bite; and they both died about the end of the fourth day, perfectly ſenſible to the laſt,

laſt, but ſtrongly convulſed. The girl bitten in the cheek was exceedingly diſtreſſed at feeling the ſlighteſt ſtream of cold air, or when expoſed to light. Mr. Godfrey did not ſee them till a conſiderable time after the accident; and the common means were had recourſe to.

At the time theſe and ſeveral ſimilar accidents occurred in different parts of Suffolk and Eſſex, I took every poſſible pains to ſuggeſt ſuch methods as appeared moſt likely to avert ſo dreadful a calamity, eſpecially as even the common means had been neglected, in ſome inſtances, where lives might otherwiſe have been ſaved. After mature conſideration the *liquid cauſtic alkali* preſented itſelf to me as a ſubſtance liable to none of the objections urged againſt the hot iron, common cauſtic, and even the knife itſelf. It's well known property of diſſolving mucus, and all animal ſubſtances, as ſoon as it comes in contact with them, gives it the preference. Beſides, the ſuperior advantage a liquid poſſeſſes over a ſolid ſubſtance of equal activity, by more readily pervading all irregular lacerated ſurfaces, and deep punctures, and by leaving no eſchar behind,

hind, which might exclude farther applications, left me no room for doubt.[z]

When wounds are inflicted about the tendenous parts of the hands and feet; about the throat, neck, and lips; in or near large nerves or blood-veſſels, the knife cannot be uſed with ſafety; whereas this ſubſtance may be applied without the ſmalleſt hazard. We can carry it as far as we pleaſe, and ſtop its progreſs in an inſtant by dilution with water. It is the baſis of all injections for preventing venereal infection, from the peculiar property it poſſeſſes of waſhing off, and diſſolving mucus. In addition to the deſtruction of the parts to ſome diſtance beyond the wound with the pure undiluted alkali, the neighbouring parts, and indeed the wound itſelf, ſhould be well waſhed with a diluted ſolution, poured from a conſiderable height.

Mr. J. Hunter recommended quick-lime, which approaches near to it; but ſurely this ſub-

[z] This has been recommended by Roux of Dijon, near 20 years ago (vide Mem. de la Soc. Roy. de Medicine, ann. 1783), and Mr. Simmons (vide Ferriar's Hiſtories and Reflections, vol. 3, p. 220) has uſed it 20 years in the Manchester Infirmary. Theſe three gentlemen ſeem to lay equal claim to the diſcovery, as it would appear they had no communication with each other. R. H.

ſubſtance ought, for obvious reaſons, to have the preference. By the uſe of this alone, and by pouring water from a conſiderable height, ſo as to fall with great force on the part for a long time, and repeated often, I doubt not but every particle of the poiſon may be either waſhed off, or effectually deſtroyed; and that the diſeaſe may thus be prevented in every inſtance.

Sudbury, Aug. 26, 1796.

CASE IV.

Communicated[a] *by Mr. Edwards, Surgeon, at Long Melford.*

F. Tweed, a labouring man of this pariſh, aged 55, going to his work about four o'clock in the morning of Saturday Oct. 22, 1791, was violently attacked by a large black or dark-coloured dog.[b] He had a large wound on the throat, which laid the trachea quite bare a conſiderable extent, and which likewiſe appeared

[a] Almoſt immediately after the patient's deceaſe.

[b] The ſame that bit the patients in the preceding caſes.

peared to be conſiderably bruiſed. One on the cheek, which enlarged the mouth a full inch; a ſmaller one lower on the chin, and another lower than the former one on the throat, which evidently proved the animal had ſhifted his hold. As the wounds were ſo large and complicated, it was impoſſible to extirpate the parts. I therefore immediately waſhed them with a ſolution of ſalt, vinegar, and water: then contracted them by ſuture, without which the face was terribly disfigured, with a view to prevent abſorption. I dreſſed with ung. cantharid. a few days; then ordered emollient cataplaſms, and permitted the wounds to heal.

The Ormſkirk medicine was adminiſtered immediately after the accident happened; and as no certain intelligence could be obtained of the dog, we flattered ourſelves with the hope of its being ſome furious animal of our own neighbourhood, not mad, and conſequently the danger over. In about a week the poor fellow reſumed his uſual employment, and continued in good health till Thurſday the 10th of Nov. when he complained to his maſter of little tingling, or pricking pains about the throat, but which he attributed to a lit-

a little cold caught in the ſo recently healed lacerations. The next day, Friday the 11th, he went to work at his uſual time, after having paſſed a reſtleſs and uncomfortable night; but about ten o'clock was taken faint and giddy, and obliged to leave his work. He then went into the farm-houſe kitchen to breakfaſt, and firſt perceived a difficulty in ſwallowing his bread; but on attempting to drink he ſtarted from the fluid with great horror. He was immediately ordered home, and walked half a mile or more with great compoſure. Being informed of his illneſs, and ſuſpecting the cauſe, I viſited him directly. I believe he had no ſuſpicion at the time of his diſorder ariſing from the late accident. I offered him a little brandy in a cup, but he could not look on it without the greateſt diſtreſs. Anxiouſly wiſhing to do any thing in my power for the poor man, in this dreadful calamity, I requeſted the aſſiſtance of Dr. Maclean[c] of Sudbury: Mr. Bolton, ſurgeon of this place, likewiſe gave his advice and aſſiſtance. He ſuggeſted vinegar as being ſucceſsful in a caſe of Hydrophobia on the continent.

[c] This is the caſe Dr. Maclean alludes to, p. 293.

nent. Being all apprehenſive that little was to be done, we agreed to make the experiment, and jointly obſerve its effects. His pulſe was ſmall and thread-like, intermitting frequently and irregularly, perhaps about every 12th, 10th, 7th, and often every ſecond or third ſtroke. His tongue was dry, and thirſt very conſiderable. Vinegar to the quantity of half a pint was got down about noon, and very ſoon repeated a ſecond and third time. It produced a plentiful evacuation from the bowels, and conſiderable perſpiration. Three grains of opium, and two of merc. emet. flav. in a pill was given every four hours. The vinegar plan was ſtill continued, with a little gruel and brandy intermediately. Laud. liquid. to the amount of 200 drops, were got down in the vinegar or gruel, in the courſe of the day and night, with ſome little abatement of the ſpaſmodic agitations. Vomiting from the beginning was very inconſiderable.[d] Swallowing

[d] Reſpecting this ſymptom, which is obſerved to take place in many, though not in every caſe, Dr. Maclean is inclined to attribute it to an irritation about the ſauces and pharynx, and the muſcles concerned in deglutition. This may ariſe, in his opinion, from the viſcid mucus adhering to theſe parts, cauſing the "contents of the ſtomach

lowing, I thought, was performed with more eaſe. The pulſe much as before deſcribed. Unremitting vigilance and attention was given to the vinegar plan, ſo that in the whole we got down four or five pints. During the progreſs of this very dreadful diſorder there never was any thing like delirium, but a ſteady clearneſs and perfect recollection. Nor was there any thirſt complained of after the uſe of vinegar. I obſerved the pupil of the eye was greatly contracted; but white objects, which at firſt gave him uneaſineſs, did not continue to do ſo; nor was he afraid of looking in a glaſs. He made no urine the firſt day, but on the following morning that evacuation was conſiderable.

Saturday the 12th, a caſe was mentioned, which happened at Wrexham in Wales, where oil had been uſed with ſucceſs in this diſeaſe. Ready to adopt any thing that afforded a ray of

mach to be evacuated without any ſickneſs." The medicines exhibited may aſſiſt in producing this action.—"This ſeemed to be the caſe," ſays Dr. Maclean, "with Francis Tweed; for I have the moſt perfect recollection of his vomiting conſiderable quantities of yellow bilious matter during my firſt viſit; but this I attributed to the quantities of vinegar that were forcibly poured down his throat." Letter to Dr. H.

of hope, we gave him from three to four ounces of ol. olivar. This was got down with as little difficulty as any other liquid; but he expired almoſt inſtantly after it, although a few minutes before he appeared likely to have laſted conſiderably longer. The whole time of his illneſs, from the firſt appearance of Hydrophobia, did not exceed thirty hours.

Quere. Is it not probable (as he was held down during the exhibition of fluids) that ſome of the oil might regurgitate, and from the mouth ſlip into the trachea, and kill by inſtant ſuffocation?

CASE V.

Communicated by Mr. Freeman, Jun. Surgeon, at Stowmarket.

It happened in the Autumn of 1790.[e]

Steward Race, aged 40, a pauper, belonging to the Hundred of Stow, was bitten by a mad dog on the face. Next day he took a fa-

[e] To this patient I was called; but a ſecond meſſenger ſpeedily following the firſt, with the news of his death, prevented my journey. R. H.

a famous ſpecific, vended by a Mr. Pizey, of Bury St. Edmund's. His lip was cut through by the dog's teeth. From the unfavourable ſituation of the wound no attempts towards exciſion were made. On Thurſday morning it was dreſſed; and on Thurſday, exactly ſix weeks from thence, he was attacked with the diſeaſe. On the preceding evening he complained of a very ſevere *cold*, as he ſaid, attended with ſhivering, uneaſineſs, and yawning. This morning (Thurſday) went out, but could not bear the *wind to blow* on him; and he walked *backwards* to prevent the uneaſy ſenſation it gave him. Attempting this afternoon to drink beer, he found he could not ſwallow; yet he ate ſome peas broth very heartily. About ſix ounces of blood were taken from him; and this night he took Tiſſot's bolus, which we are told was compoſed of ten grains of each of the following articles, viz. rad. ſerpentar. virgin. aff. fœtid. and camphor, with a grain of opium.

Friday----no reſt from the bolus; appeared very *ſad* and dejected; paſſed a good ſtool; pulſe regular; gave him Cobb's powder, which he took every three hours in roaſted apple: he kept them down but a ſhort time, for he had

had now a conſtant vomiting: complained greatly of a difficulty of breathing. This night his ſleep was reſtleſs and confuſed, with frequent fits of delirium and raving. The bitten parts were inflamed, as ſhould have been obſerved: he had a ſwelling alſo on one ſide of his face, which extended down to his throat. He could not now bear either the ſight of water, or any thing liquid.

Saturday morning at ſix o'clock, was in ſuch horror and delirium, that his attendants were obliged to tie him down in bed, though he did not attempt to commit any violence on them. When the fit was over he requeſted them to tie down his legs (ſo ſenſible and rational was he) leſt he ſhould do them harm. Saw him about ten: he conceived now they came to ſmother him, and was much frightened: oppreſſion acroſs the præcordia was increaſed; he ſpat immoderately; was continually talking about his malady, and ſometimes very rationally: was bled a ſecond time to the ſame quantity as before; it relieved ſomewhat his breathing: a clyſter was injected, as his bowels were uneaſy. Sometimes he would lie down on the bed apparently eaſy for the ſpace of half a minute, and then jump up in the greateſt

horror

horror imaginable. One circumſtance was curious; he now called for water to waſh his hands: it was given him; he roſe up in the bed, ſhut his eyes, and with the greateſt reſolution, though with the utmoſt horror, accompliſhed it. By his own requeſt alſo he took a powder in water: vomited it up ſoon after: ſwallowed now very indifferently: about three P. M. called for ſomething to drink; but expired before his attendants could fulfil his laſt requeſt.

CASE VI.

By Mr. Thompſon, Surgeon, at Acle, in a Letter to Dr. Girdleſton, Phyſician, Yarmouth, Sep. 23, 1796; and by him communicated to the Author, with Remarks.

Dear Sir,

On the 2nd of April, 1796, Samuel Smith, about the 18th year of his age, was bitten juſt above the outer arch of the left eye-brow, by his maſter's dog, who was of the Newfoundland breed. The dog had diſcovered no ſymptoms of illneſs, and at the time of biting he did not

not appear angry, but in his uſual playful mood. The wound ſeemed merely a ſcratch. It bled, and the lad applied to it ſome ſhag from his hat. The next day the dog was miſſing. The ſingularity of this circumſtance excited the fears of the lad, who was then adviſed by his neighbours to place himſelf under the care of a man of the name of Cutting, who pretends to have the power of preventing attacks of Hydrophobia, or even of curing it, after the ſymptoms of that diſeaſe have fairly commenced.

Cutting gave the lad his medicine; and that evening, by the deſire of his maſter, the lad applied to me. I removed the bitten part, and cauteriſed it with the lunar cauſtic. The next morning I bled him, and wrote to you concerning his future plan of treatment. But as Cutting poſſeſſed his confidence, and popular opinion was in favour of Cutting, he had ceaſed to be my patient, and I am unable to ſay how long the wound was kept open. I rather think it was ſoon healed, as Cutting had diſapproved of every thing I had done. The lad, after taking nine doſes of Cutting's antidote, was declared by him to be exempt from danger.

On

On Monday the 16th of May, he was in many different places after his maſter's buſineſs, and though uſually a ſober lad, he that day had drank freely. In the evening he went to a camping match, was intoxicated, and ſtaid out all night. On Tueſday and Wedneſday he was very much indiſpoſed; but he attributed his indiſpoſition to his preceding intemperance. On Thurſday morning about five o'clock, I was called up to him, and found him labouring under the uſual ſymptoms of Hydrophobia, and complaining of a burning pain at the pit of the ſtomach. I took away twelve ounces of blood from him, and gave him the following bolus in a little conſerve of hips: tartaris. antim. one grain; calomel pp and camphor, each four grains. This bolus produced three or four motions; and as he had had no ſleep, and appeared dreadfully agitated, he took 60 drops of laudanum; and at the expiration of one hour 70 more. He then ſlept ſoundly for an hour and a half, but did not appear to be relieved by the ſleep. As the ſymptoms were all increaſing, he then began upon Fowler's drops, in twelve drop doſes, as you had recommended. I ſtaid with him all Thurſday night, and on Friday you

ſaw

ſaw him. His ſtate at that time is doubtleſs freſh in your memory; and about ſix o'clock that evening he expired.

It may be proper to obſerve, that he poſſeſſed great reſolution, was ſenſible of his dangerous ſtate, complied with every requeſt, and retained his ſenſes till his death. A ſtream of air increaſed his agitation; and the blood, at its firſt effuſion from his arm, wonderfully affected him. His countenance, at different times, ſtrikingly marked every paſſion; and every action was expreſſed with morbid quickneſs.

The above, my dear Sir, is a pretty accurate ſtatement of the poor lad's caſe.

Your's reſpectfully,

H. D. THOMPSON.

REMARKS.

To the above ſtatement by Mr. Thompſon I have only to add, that the lad had no priapiſm; nor would he acknowledge to have any increaſed ſenſibility about the œſophagus; but referred

referred all his painful ſenſations to the pit of his ſtomach. A ſtream of air from the window, or the ſight of any liquid at the diſtance of ſome yards, wonderfully increaſed his agitation. The part where the wound had been given was without pain, and the ſcar was ſcarcely viſible.

Immediately on ſeeing him I gave him a large cup of olive oil. He had much increaſe of convulſive action on endeavouring to ſwallow the oil; but after getting it to his mouth he ſwallowed it very haſtily. The cooling and pleaſant ſenſations which the oil at firſt produced gave him great hopes, and he was able to ſwallow three cups of oil with much leſs difficulty. In about half an hour he had drank near twelve ounces of oil; but from that time the oil ceaſed to alleviate any of the painful ſenſations, which kept increaſing until ſix o'clock in the evening, when he died. As Mr. Thompſon, after ſitting up all night, was attacked with an eryſipelatous inflammation of the head and face, no diſſection was made of the body.

The ſingularity of his caſe ſeems to me to be, that the dog had accompanied the lad for ſix preceding days upon a journey, with his

uſual *ſprightfulneſs;* and that, by the teſtimony of the whole family, the bite appeared to be given accidentally in a fit of *play*, which the dog was in the habit of having *provoked* from him, not only from the unfortunate lad, but even by the children of the family. From ſuch a fact one would be inclined to ſay, that no bite from any dog ought in future to be received without the wound undergoing an immediate exciſion.

When Mr. Thompſon wrote to me to know what I would recommend, if the ſymptoms of Hydrophobia ſhould appear, my anſwer was, that as all the common medicines had failed, I would adviſe the trial of arſenic, in ſuch doſes as could be given with ſafety: but as Mr. Thompſon had no preparation of arſenic by him when the ſymptoms of Hydrophobia commenced, no concluſion can be drawn from the three doſes of Fowler's drops which were given to Smith; ſince they were neither ſufficiently ſtrong to excite any new action in the habit, nor given until the hydrophobic action had nearly killed the patient.

My reaſons for the trial of that mineral in this diſeaſe were, becauſe the bites of the *co-*

bras

bras de Capello,[f] and *cobras de Manillo*[g] ſerpents, in the Eaſt Indies, are always fatal in a few hours, excepting in thoſe bites of them where the Malabar antidote had been almoſt immediately adminiſtered: and although the compoſition is made up by the Bramins, and kept a ſecret, and is very rarely allowed to be given by any other hands but their own to the patient, yet the Europeans in that country have diſcovered, that arſenic forms the principal part of theſe pills. They almoſt immediately after being ſwallowed excite a moſt violent vomiting and purging, which continue for ſeveral hours. Until it was known that theſe pills contained arſenic, the ophiorhiza root was ſuppoſed to be the principal ingredient of them; becauſe the ichneumon,[h] when bitten in his battles with theſe ſerpents, is ſaid to cure himſelf by ſome of that plant.

THOMAS GIRDLESTONE.

[f] Coluber nija
[g] Coluber bactaen } I believe of Linnæus.
[h] Viverra mungo

CASE

CASE VII.

Dr. White's firſt Communication to the Author.

DEAR SIR,

In compliance with your requeſt, and with a deſire to add my mite to your laudable work, I have ſent you a few particulars of the four caſes which it has been my misfortune to be called to in the courſe of my practice.

The firſt was that of a huſbandman, aged about 35, to whom I was ſent for on the third day from the Hydrophobia, and about the fourth week from his being bitten by a cat on the wriſt; which animal he inſtantly deſtroyed, without entertaining the leaſt idea of its being mad. The moſt remarkable circumſtances in this man's caſe, as the ſurgeon who attended informed me, were alternate depreſſion and phrenzy, for the two firſt days of the hydrophobous ſymptom, and the ſenſe of cold and rigor, previous to the latter paroxyſm.

He had been bled rather copiouſly early in the morning, after which it was obſerved to me, that he had continued at leaſt ſix hours in a more quiet but dejected ſtate. This inter-

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val was not leſs than four hours longer than any one previous to it, and had induced the attendants to remit his confinement. At length, being ſuddenly ſeized with ſuffocating ſtricture in the throat and cheſt, he broke looſe and ran furiouſly into an outhouſe, the door of which his affrighted purſuers faſtened on the outſide. I reached the houſe in time only to be an eye-witneſs of his loſs of ſtrength from ſeveral wild attempts he made to climb the wall, and of the convulſive ſtruggles which ſoon put an end to his exiſtence. He had been continually hawking up ſaliva, and the offer of liquids cauſed great agitation. There was afterwards ſufficient authority to conclude that the cat was mad.

CASE VIII.

Dr. White's ſecond Communication.

A middle aged man had been bitten on the hand by a dog which, from various circumſtances, was proved to be mad. The apothecary who attended had recommended Dr. Mead's *pulvis antilyſſus:* he took it four mornings ſucceſſively, and afterwards bathed regularly

larly in the ſea every morning, for near a month. He then grew dejected, and complained of pain ſhooting from the part bitten up the elbow repeatedly, together with ſlight uneaſineſs in ſwallowing his ſaliva. His terror increaſing, I was ſent for on the following morning; at which time he felt much ſtricture in his throat, more particularly on each attempt to ſwallow liquids; alſo a heavy dull weight at the ſternum, which he ſaid *dragged down his wind pipe*. I ordered *muſk*, *camphor*, and *opium* made into a large bolus, with *conf. rutæ*, to be taken every four hours. A liquid epithem with *tinct. thebaic.* to be applied to the throat and the ſemicupium, which was repeated at night. Partial ſweat was promoted by it, but of the faint clammy kind, with frequent fluſhings on the face and neck; the ſymptom of painful deglutition ſtill increaſing. On the next morning, which was the third of the ſymptoms, the ſaliva was thrown off with great difficulty: his mind was much agitated, and he refuſed with vehemence every thing that was offered to him. Debility rapidly increaſed, and he died in convulſion the morning of the following day, which was the 34th from the bite.

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The wound was ſtudiouſly kept open with cauſtic and eſcharotics. The ſtomach did not appear to be affected with either nauſea or pain; but the abdominal region was conſtantly in a ſtate of ſpaſmodic conſtriction, although an oily enema had been repeatedly given.

CASE IX.

Dr. White's third Communication.

In this unfortunate caſe I was conſulted on the ſixth day from the accident. It was the bite of a mad dog on the calf of the leg of a healthy lad, who was about 14 years of age. He had taken the Calthorpe medicine, with *theriac. venet.* &c. from the ſecond day, and on account of the confidence repoſed by the relatives in the report of the adviſers, it was continued to the tenth morning, according to the terms ordered in the recipe. This did not prevent my endeavour to throw into the habit *ung. merc. fort.* (a remedy at that time ſtrongly recommended) in ſufficient quantity to raiſe a ſpitting, which came on in a gentle manner on the ſixth day of uſing it, and was continued,

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in a moderate degree, up to the firſt ſymptoms of conſtriction in the throat, and a ſlight pain diverging from the wound; theſe came on about the 26th day from the bite. I then ordered a bolus with *camphor*, *caſtor*, and *opium*, to be given every fourth or ſixth hour, agreeably to its viſible effects: the *opiate epithem* to the throat, and his feet and legs to be repeatedly fomented or immerſed in warm water, the ſteam of which, on attempting the latter proceſs, excited ſtrangulation to an alarming degree: it was therefore prohibited. He took four of the boluſſes on that day and night, but with no good effect. On the following morning I found, that the nervous ſtartings, and conſtriction in the throat and cheſt were increaſed, that his pulſe was quick and weak, his urine and ſtool paſſed involuntarily, his eyes had a vacant ſtare and a diaphanous appearance, and that his breathing was very ſhort. Nothing further was attempted, and he died the next morning, being the 29th from the bite.

CASE

CASE X.

Dr. White's fourth Communication.

A labourer, aged about 30 years, meeting with a little dog which he knew, in full run on the road, caught it in his arms, and was bitten by it in the cheek, by which the animal freed itſelf, and ran off. The poor man hearing ſoon afterwards, by chance, that it was mad, became extremely unhappy, yet kept the accident a ſecret from every one but his father, from whom he obtained a ſolemn promiſe not to diſcloſe the matter to any one, entreating him at the ſame time to purchaſe for him a box of pills, which, like every other prophylactic medicine in ſuch caſes, had acquired falſe repute. About a month from the bite he complained of ſome difficulty in ſwallowing, and a diſagreeable ſtiffneſs on that ſide of the face, which ſymptoms were ſo far increaſed on the following morning as to occaſion much alarm, and add greatly to the horrors to which he had been all along ſubject; and the father, with ſome difficulty, prevailed upon him to ſend for medical aſſiſtance. Nothing particu-

lar

lar was diſcovered in the throat, except that the fauces were in a ſtate of relaxation. An aſtringent gargle was therefore ordered by the ſurgeon who attended, and an opiate pill to be taken at bed time. He could not be perſuaded to go to bed; but now and then, as he ſat in his chair, fell into ſhort ſlumbers, attended with muſcular twitchings and irregular reſpiration. Early the next morning the ſurgeon's attendance was again required, who ſtrictly examined the fauces, but perceived no change for the worſe; yet was rather ſurpriſed at the dejected appearance of the countenance, and the catchings in his breath; alſo at the painful ſenſation in the cheſt and præcordia, which the patient complained of. He therefore recommended that I ſhould be ſent for. We met ſoon after, and found the poor fellow ſitting in a dark corner of the room, with a ſettled melancholy in his countenance, and frequently hawking up, and at the ſame moment ſpitting out the ſaliva. I ſaw no viſible ſign of diſeaſe in the throat; but whilſt I was examining his throat and fauces a ſecond time, he complained that the room was cloſe, and he wanted air, and begged to have the window opened; at which time it rained heavily, and

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the moiſture of the external air ruſhed upon him ſo ſuddenly, that he ſtarted from the chair, and haſtily cried out *I ſhall be choaked.*

This convulſive conſtriction, which was ſimilar in appearance to the ſenſation and effect that water has on ſome perſons at firſt bathing, immediately ſtruck me with the idea of Hydrophobia, and to render it more certain I called for a glaſs water, and offered it to him to drink; but he refuſed it peremptorily. I then went out of the room for a ſhort time, and took the opportunity of queſtioning the father, ſo pointedly at laſt, that he with tears confeſſed the truth, as before related. We then returned together into the room where the ſon was, who with a melancholy and affecting tone of voice immediately called out *Oh! father, father, you've betrayed me!* Pretending ignorance of what he meant, I told him that his complaints aroſe from a ſlight cold, but could be ſoon removed, if he would take a pill I ſhould order him, and go to bed: that word had ſo ſtrong an effect on his mind, that he called out in the greateſt diſtreſs, *No, no, then you'll ſmother me.* In a ſtate of deſpondency, and with agonizing groans, he threw himſelf down, as we thought, in a corner of the

the room, and ſoon after crawled about in a reſtleſs manner, dragging his legs after him, which proved to us, that he fell on the floor from his lower limbs being palſied. In proportion to his loſs of ſtrength he became more compoſed and reſigned to his fate, ſhaking hands with ſeveral of his friends about him, and deſiring them not to be afraid, for he ſhould not hurt them. Whilſt he was performing this act of friendſhip with his fellow labourer, his mind became ſtrongly agitated, a general convulſion ſeized his whole frame, and cloſed this melancholy ſcene.

In reference to the foregoing caſes I have to inform you, that the hiſtory of the firſt, prior to my arrival, was given me by the farmer, in whoſe employ the poor man had long earned his bread. The narrative of the ſecond caſe I obtained from the apothecary, who lived near to, and anxiouſly attended upon the patient. The third caſe is drawn from notes generally taken. With regard to the fourth caſe, I ought to apologiſe for ſo tedious a detail of particulars foreign to your purpoſe; but

but the horrid circumſtances attending it had made ſo ſtrong an impreſſion on my mind, that I found it impoſſible to disjoin them. I do not recollect either hearing of, or ſeeing any ſymptoms of vomiting in the foregoing inſtances; and muſt beg leave further to remark, that whenever either of the two caſes to which I was called in time to make the trial, has recurred to my memory, it has been a ſubject of regret with me, that the idea of extirpation and ablution, even at an early period of the hydrophobous ſymptoms, did not preſent itſelf.

I am, dear Doctor,

Your's moſt ſincerely,

Bury St. Edmund's,
April 4, 1797.

R. WHITE.

Letter from Mr. John Hunter to the Author, in Anſwer to ſome Queries.----Republiſhed from firſt Edition.

DEAR SIR,

I received the favour of your's. I am always extremely happy when I can give any uſeful information; but all the information I can

can give you relative to the Hydrophobia is rather negative good than poſitive. All the means recommended were uſed in Maſter Rowley's caſe. I ſaw him only a few hours after the bite. The lip was torn a good deal. The teeth had gone through and through, and had torn out a piece. I immediately applied the cauſtic to every ſurface that I conceived had been made by the dog's teeth; and when thoſe ſloughs came away, I went over the ſame field a ſecond time; but from the termination of the whole, I am inclinable to believe that I did not touch every part where the teeth had been. He took the Ormſkirk medicine by the direction of Mr. Barry, who ſells it, therefore we muſt ſuppoſe it was properly given. He alſo took the Tonquin medicine, viz. muſk, cinnabar, &c. as alſo rubbed in mercurial ointment till his mouth was ſore. My whole dependence was on the cauſtic, but did not object to the others being given. I wiſh I could ſay more on the ſubject in general. We ſeem to be as much at a loſs how to treat it as they were a thouſand years ago. I have not yet heard of the particulars of Maſter R.'s attack and ſymptoms. I want very much to learn them. To aſcertain a mode of cure

will

will be very difficult: for a few caſes not having the ſymptoms, under any courſe, prove but little. I know where there were twenty-one people bit by one dog: nothing was done for any of them, and only one was taken ill. If they had all taken medicines, then it would have been ſaid, that they only loſt one out of twenty-one.

I am, dear Sir,

Your moſt obedient ſervant.

JOHN HUNTER.

London, March 3, 1785.

CASE XI.

Communicated by Mr. Tuſon, Surgeon, at Boxford---republiſhed from firſt Edition.

I was informed that Maſter Rowley, the ſubject of this caſe, was on a viſit in Jermyn-ſtreet, the 6th of Dec. 1784, where a ſtray dog came into the room. The lady of the houſe taking notice of its being very thin and poor, ordered a plate of meat to be ſet before it, which

which the dog eat. The young gentleman took particular notice of it, and ſtooping down to examine it, the animal turned from its meat, and bit him on the right ſide of the lower lip. He was immediately ſent in a coach, which was then ready at the door, to Mr. Hunter's, in Leiceſter-fields, being at the diſtance of about a quarter of a mile, who very wiſely and cautiouſly treated it as ſuppoſing the dog mad, by applying a cauſtic to the part in ſuch manner, as to endeavour to deſtroy all the adjacent abſorbing veſſels from taking up any of the venom. Immediately on which Dr. Turton was conſulted. The Ormſkirk medicine was given, and mercurial ointment rubbed into the legs twice a day: the muſk medicine was likewiſe given.

I found by Dr. Turton's account, they were alarmed at the feel of the ſkin, and ſome other dangerous ſymptoms, when in town, before the muſk medicine was given. They continued the Tonquin medicine and ointment till he came into the country, which was on the 24th of December, where he arrived in perfect health. I ſaw him on the 25th, with his lip healed, which was kept open till nearly the time he came down. I received

direc-

directions from Dr. Turton and Mr. Hunter as follows: "That the general health muſt be more particularly attended to, the ſtate of the bowels, the pulſe, &c. muſt be watched." Before he began the muſk medicines the pulſe was low and feeble, the feel of the ſkin cold and clammy, though he made no complaints. The feel of the ſkin and pulſe are now (25th) much better, and he appears to have no complaints----bowels in their natural ſtate. Mr. Hunter thinks the wound in the lip may be permitted to heal, and that any little ſoftening application, ſuch as ſuet, oil, freſh butter, &c. and preſerving it from the air, is all that may be neceſſary. "We wiſh however not to omit any thing that may be neceſſary to prevent miſchief, and could wiſh the muſk medicine and mercurial ointment to be continued, under the direction of thoſe who attend. Half a dram of the ſtrong mercurial ointment may be rubbed in twice a day, but the gums and mouth muſt be watched, as we do not wiſh to bring on a ſalivation, though we could wiſh to fill the conſtitution pretty full of mercury. Under this idea it muſt be continued or diſcontinued, from time to time, for three weeks to come.

"We ſhould adviſe alſo the uſe of the following preſcription, according to the circumſtances of the pulſe and feel of the ſkin, and *general ſtate of the health*, which we beg to repeat, as we conſider it as the moſt material."

Two ſcruples of the ſtrong mercurial ointment were rubbed in for two or three days; but as the weather has been ſo ſevere, half a dram only hath been uſed twice a day, and that diſcontinued for two or three days. The muſk medicine, as ordered, was muſk ſix grains; nat. & fact. cinnab. each eight grains; to be given in a bolus every eight hours. The doſe of muſk and cinnabar may be varied according to circumſtances, but ſhould be continued, at times, for three weeks to come.

I was, on inquiry, informed the dog was ſecured, and died before the young gentleman left town; therefore I obſerved a ſtrict attention to the method adopted of giving the muſk medicine, and rubbing in half a dram of the ſtrong mercurial ointment twice a day. I was deſired to viſit him every other day. He continued perfectly well as to his pulſe, feel of the ſkin, ſtate of the bowels, and in great ſpirits till about four days after, when I perceived a cold clammy feel on the hands, with a tolerable good pulſe, but without complaint.

plaint. I was induced to believe that this feel might ariſe from a pain from a contuſion on his great toe, which was occaſioned by a table being overturned and falling upon it. Upon my next viſit I found that diſagreeable ſymptom quite gone off; his hands very warm, dry, and comfortable, and his toe much eaſier, which ſeemed to confirm my ſuſpicion.

As I wiſhed to prevent any bad conſequences as much as poſſible, and adhere to Dr. Turton's ideas, about ſix or ſeven days after his coming into the country, I increaſed the doſes of muſk to eight grains, and the cinnabar to ten each, and the ointment to two ſcruples twice a day. In this manner he proceeded till January 12, without any ſymptom of illneſs or complaint whatever. I was as particular and minute as poſſible in my examinations, and could not find any tendency in his conſtitution but what perfectly coincided with health. I was ſent for early on Wedneſday morning, January 12, and upon my arrival was informed, that the young gentleman had complained about four o'clock in the afternoon of the day before, with headach and ſickneſs; that he had a very reſtleſs night, and at this time could not ſwallow well. I was alarmed at the account, and

ſorry,

ſorry, as I viſited him every other day, that he happened to be ſeized on my vacant day. Upon my entering the room I immediately perceived he laboured under a confirmed Hydrophobia. I called for ſomething for him to drink: as ſoon as it was offered him he was immediately convulſed, particularly about the throat, and drank it with much agitation. This confirmed me in my opinion. He complained exceedingly of a pain in his head, and great thirſt: his pulſe was very quick, full, and hard; and he lay toſſing about in the bed. I aſked him if he felt any uneaſineſs in his lip. He told me he felt pricking pains about the part the evening before, and at that time he felt a ſoreneſs on touching it. I deſired that every aſſiſtance that could might be procured. Two meſſengers were diſpatched for two phyſicians.[k] In the interim I gave him three doſes of the above muſk medicines every hour, and propoſed bleeding him; but as farther aſſiſtance had been ſent for, I deferred it till they came: they agreed in my opinion. I took about ten ounces of blood from the arm: they wiſhed to ſee him take ſome liquid; he took it

[k] Dr. Chapman then of Sudbury, and Dr. Gibbons of Hadleigh.

it in his hand, put it haſtily to his mouth, and upon deglutition, all the muſcles concerned in that action ſeemed very much convulſed. His tongue appeared clean, not dry. They ordered nat. and fact. cinnab. each eight grains, with ten grains of muſk and one of opium, made into a bolus, to be given immediately, and repeated every three hours, without the opium. Theſe he took regularly; likewiſe an injection with a pint of gruel, and two ounces of oil, thrown up for a clyſter. A cloth wetted with oil was applied to his throat; his feet bathed with flannels dipped in hot water for a conſiderable time together, and four ſcruples of the ſtrong mercurial ointment were rubbed in twice a day, as they wiſhed to promote a ptialiſm. He paſſed moſt of the day in a chair, and now and then walked about the room. His eyes appeared very wild and red. He had a ſmall ſtool from the uſe of the injection. He made very little urine: his blood appeared a little inflamed, and ſomewhat ſizy. In the courſe of the day he frequently took bread moiſtened in tea or gruel. He went to bed in the evening early, and got two or three hours ſleep (I ſuppoſe from the effect of the grain of opium) after which he

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appeared very reſtleſs and convulſed: towards the morning he was exceedingly ſo, and not able to lie ſtill a moment, conſtantly calling for ſomething to drink, and complaining of great thirſt. He then ſwallowed with great anxiety and perturbation, and appeared in the utmoſt diſtreſs. On the morning of the 13th (Thurſday) he roſe about ten o'clock in the ſtate abovementioned: about twelve his phyſicians ſaw him again; his pulſe was about 130. They then ordered him twelve grains of muſk; merc. emet. flav. two grains, opium one grain; to be made into two boluſſes, with a little mucil. g. arab. to be taken every third hour. The opium to be added or omitted according to circumſtances; and continue the uſe of the ointment. They had not left him an hour before he was taken with frequent vomitings, reachings, and conſtantly ſpitting a viſcid phlegm. This came on before he took the turbith pills. He took one doſe with opium as ſoon as it came, which was about two o'clock. He was very ſenſible and pertinent in his anſwers and converſation till now, when a delirium came on, with ſuch fears and horrors as are ſcarcely deſcribable, rubbing his throat, and walking up and down the room in great agony, but without any violence to any

one

one in it. He continued in this diſtreſſed ſtate till about ſix in the evening, when he was ſtanding up, and leaning on the houſekeeper, and nature, from his inceſſant talking and raving, being exhauſted, he dropped down in a kind of fit. He was then laid on a bed quite ſenſeleſs, and ſpeechleſs, groaning, foaming at the mouth, now and then vomiting a dark brown choler, and appeared as if ſtrangled. He expired about half paſt eleven at night. His lip, after death, did not appear altered.

It ſhould have been mentioned, that on the 11th he complained greatly of a pain in his right ear; and this was the firſt ſymptom obſerved. A flannel dipped in warm water was applied, to which was added a little brandy: by this method the pain abated in the afternoon of Wedneſday the 12th.

CASE XII.

Communicated by Mr. John Hunter----republ- from the firſt Edition.

Dear Sir,

The poor French woman the dog bit a few minutes before Maſter Rowley, died laſt Tueſ-

day

day ſe'nnight, at two o'clock in the morning. She was taken ill the Tueſday before with a pain in the wound, which rather increaſed. She called on me on the Thurſday, but I was not at home. She called on the Friday, and I ſaw her. The cicatrix was very painful, and ſhe ſeemed not to be perfectly well. At twelve o'clock that evening ſhe was taken with a kind of fit. The apothecary was ſent for, who gave her two grains of opium. I ſaw her on Saturday morning, when ſhe had all the ſymptoms of the diſeaſe, although not violent. I ordered opium to be given, as much as they could get her take. The ſymptoms became more and more violent till ſhe died.

From the time ſhe took the firſt doſe on Saturday about eleven o'clock, till ſhe died, which was about ſixty hours, ſhe took only forty-four grains of opium; and 200 drops of laudanum in clyſters.

The ſores had cauſtic applied ſeveral times, but *not till ſeveral days after the accident.*

London, April 2, 1785.

CASE

CASE XIII.

Republiſhed from the firſt Edition.

William Knipe, a farmer, near Kirby Stephen, was bitten early in March, 1784.[1] Till about the firſt of February, 1785 (eleven months after) he felt no inconvenience from the bite; when, in Kirby Stephen market, he complained of a pain, from the wounded hand up to his ſhoulder, and went home. On that evening the Hydrophobia took place, which held him, at intervals; and on the Thurſday following he died: another caſe of the failure of the celebrated Ormſkirk medicine.

CASE XIV.

Communicated by Dr. Rhodes, Surgeon to the Army----republiſhed from the firſt Edition. The Patient was carried to the Edinburgh Infirmary, where the Treatment was proſecuted.

-------- Chriſty, aged 11, was ſix weeks ago bitten on the right arm by a mad dog: nothing was

[1] Vide Whitehall Even. Poſt, Feb. 12, 1785.

was done to the wound at the time. She has ſince taken a medicine that contained liverwort for one of its ingredients: has been ſweated for a conſiderable time together, and taken ſome mercurials.

About three days ago ſome unfavourable ſymptoms appeared. On Sunday at one o'clock, P. M. ſhe was taken into the hoſpital, and had the cicatrices of her arm cauteriſed, and took five grains of vol. alkali in a bolus.

At three ſhe ſwallowed a ſecond bolus of the ſame, but not without much perſuaſion. Starts ſometimes, and ſeems much frightened; ſighs frequently and heavily; talks in general ſenſibly, but ſometimes raves; pulſe quick, and very irregular; is much frightened if any cold touches her; ſtarts, and is more convulſed in a recumbent poſture than when ſhe ſits up.

At four an attempt to go to ſtool; is afraid we ſhould ſhoot her; wiſhes to go to ſleep; pupils of her eyes very much dilated; can bear the ſight of a looking-glaſs, but not even the mention of water. Another bolus exhibited; ſhe took it with more reluctance. At five vomited. A fourth bolus given; and though her intention is evidently to take it, yet her arms

ſeem,

ſeem, contrary to her inclination, to be convulſed, and thrown away from the mouth, when near it. Has difficulty in putting ſugar to her mouth, of which ſhe is fond. At eight took another bolus of the vol. alk. and had a clyſter adminiſtered, containing one ſcruple of muſk, and fifteen drops of l. l. did not retain it. Another bolus given at ten o'clock, conſiſting of ten grains of muſk, and fifteen drops of l. l. but ſhe rejected it immediately. Seeing it was impoſſible to attempt another bolus, and from the bad ſucceſs of the former clyſter forty drops of l. l. in two ounces of water were injected, but with much difficulty.

At half paſt eleven o'clock all her former ſymptoms increaſed. Cannot now bear the ſight of a looking-glaſs; fits more frequent; convulſions ſtronger; always raving; ſaliva from the mouth in great quantity, and appears bloody; complains greatly of her throat; has frequent retching to vomit.

Three o'clock, A. M. Has been raving conſtantly ſince our laſt viſit; conſtant vomiting; flow of ſaliva more copious. At this time a bolus of ten grains of muſk, and fifteen drops of l. l. was given, which ſhe now took with much leſs reluctance than the former; but it did

did not ſeem to get beyond the larynx: it was vomited up the next moment.

Four o'clock. Took another bolus, and ſeemed as if ſhe could retain it: ſymptoms as before.

Half after five. Still raves continually; but ſometimes makes ſenſible anſwers. Not ſo much convulſed of late, nor ſeem ſo much frightened; made ſome water; has juſt taken a bolus with little entreaty, and without the convulſed motion of her head as before.

Half paſt ſix. Is now in a perfect ſweat over her whole body. Pulſe rather calmer, but ſtill too indiſtinct to be reckoned.

Seven o'clock. More delirious; weaker; convulſive ſtartings leſs frequent; pulſe irregular and weaker; bolus rejected, which ſhe ſwallowed with as little entreaty as the laſt. Some moiſture ſtill on her ſkin, but chiefly on the upper part of her body, and of a clammy nature.

Half after eight o'clock. Still weaker; eyes very much contorted; pupils exceſſively dilated.

Nine o'clock. Sinks apace; is now without motion----dead. A little after death the pupils contracted to nearly their natural ſize.

DIS-

DISSECTION.

1 The whole ſurface of the body of a dun colour: nails livid; alſo ſome parts of the arms.

2 Head----D. mater of the natural appearance; nothing extraordinary in the ventricles; choroid plexus rather pale; veins on the ſurface diſtended with blood.

3 Fauces----Membrane lining the inſide of the mouth of the natural colour; tongue alſo natural; epiglottis, larynx, and ſpaces between the cartilages of the trachea ſo very little altered, as to render it doubtful whether any thing redder than common: pharynx natural; ſubmaxillary glands of the natural appearance. Parotids being cut through appeared redder; but doubtful whether the redneſs did not proceed from extravaſation of blood from the cut veſſels.

4 Thorax---Œſophagus natural; lungs much inflamed, and towards the back part of a lived appearance: pericardium and ſurface of the heart natural: a conſiderable ſoft whitiſh polypus in the right auricle, adhering looſely:

right

right ventricle no blood; ſmaller polypus than that in the right auricle found in the left auricle, and adhering rather more firmly: little red blood in the heart.

5 Abdomen----Stomach natural; ſome mucus in it; two lumbrici; that part of the inteſtines towards the end of the ilium contracted, and the coats thickened in ſome places: pancreas redder than uſual; all other parts ſound.

Though the following caſe has been already publiſhed, I republiſh it without abridgement, becauſe the periodical work from whence it is taken is in the hands of only a few, and is chiefly confined to public libraries; and becauſe it is one of thoſe inſtances heretofore produced of infection without a wound;[m] and I am perſuaded the reader will not be diſpleaſed with its inſertion. I am indebted for it to the Rev. Wm. Kirby, A. M. F. L. S. Rector of Barham, reſpectable among his friends for his love of ſcience, eſpecially his knowledge in

[m] Vide vol. 1, page 102.

in entomology. A tranſlation, at his requeſt, was procured for me, by Mr. Marſham, Treaſurer to the Linnæan Society, from the Memoirs of the Academy of Sciences of Sweden, for 1777, in the library of Sir Joſeph Banks, Bart. Preſ. R.S. &c.

CASE XV.

By Dr. J. L. Odhelius.

Fortunately this cruel diſorder is very rare in our native country, to which the temperate ſtate of the climate greatly contributes; for violent heat, ſcarcity of water, alſo impure water, as well as putrid or putrifying animal food, are doubtleſs the principal cauſes of the infection of dogs, wolves, and other carniverous animals, which often infect cattle, and not ſeldom the human ſpecies.

We ſo ſeldom ſee ſimilar misfortunes happen to mankind, that not a ſingle caſe has been announced to the Royal Academy of Sciences ſince its inſtitution; neither does Mr. Runeberg mention[n] that a ſingle perſon has died of this terrible diſorder for eight years, from

[n] In the Tranſactions of the Royal Academy of Sciences, 1775, page 221.

from 1766 to 1773 inclusive; also Dr. Dalberg, physician to the king, passes it over in silence in his last memoir concerning our climate.

Reports have occasionally arisen of such unfortunate accidents, e. g. in 1771; but an authentic case has seldom been known. The late Archiater and Chevalier Rosenstein mentions only a few certain accidents in his long and extensive practice. Last year Dr. Martineau and Professor D. Bergius had an opportunity of seeing a single one in a gardener of Mr. Kusel, the merchant, who died with symptoms very similar to those I now take the liberty of mentioning to the Royal Academy; which melancholy accident I may the rather be permitted to relate, as I partly was an eyewitness of all the symptoms, and so narrowly investigated all that happened, before any thing could be forgotten, that the Academy may entirely rely on the truth of it.

J. R. a gentleman's son, 12 years of age, complained in the morning of Midsummer day, 24th of June 1777,° of being ill, but nevertheless

° It is remarkable, that the great English physician, Mead, says he observed, that in the greatest number of Hydrophobics, the spasms which precede generally discover

leſs went with his parents to the park, where they ſpent the whole day. The 25th he was rather ill, but not ſo bad, but as he was of a peculiar lively diſpoſition, to be able, on Thurſday the 26th to go to ſchool; and on coming home in the evening, complained only of a ſoreneſs in his thighs; on which account a napkin dipped in warm vinegar and brandy, was laid on during the night. The following morning, the 27th, he ſaid he was well, and went to ſchool again; but as he went, complained of being fatigued, which was not uſual for him to do: he ſtudied alſo as he uſed to do, but was unuſually dull and heavy; and as he in the evening complained of his bowels, his mother gave him an infuſion of ſenna, which purged him a good deal till the forenoon of the 28th, on which morning he drank tea; but about noon he had a great deſire to go to ſtool; jumped up haſtily, and exclaimed, *Oh! I have received a ſtroke in my breaſt, and ſobbed;* by which he meant an oppreſſion on his

cover themſelves at the full moon. (vide his works, Paris edit. page 91). In this caſe the lad complained of being ſick three days after the full moon: but who knows if he had not before felt himſelf ill, although he did not complain.

breaſt, and a difficulty of breathing. As he was obliged to be helped on the night chair, his mother thought he would faint, and offered him water gruel to drink, which he could not take, refuſing it eagerly; appeared alarmed, and was very ſtrange in his behaviour. The next night his ſleep was unquiet; he was awakened by a noiſe in the ſtreet; jumped up haſtily; complained of his breaſt, where he ſaid he had *ſobs;* alſo a ſtitch in his ſide and belly: he deſired himſelf that I might be ſent for, and that he might be bled. The 29th of June, at ten o'clock, A. M. I went to him, and found him ſitting on a chair, with a fierce countenance, ſpaſmodic catchings in his cheeks, his pulſe high, his breath as if he were near being ſtrangled, complained of a violent head-ach, and that he was much afraid.[p] I looked at the inſide of his mouth, where all appeared well except the palate (uvula) which was a little red and ſwoln: the tongue was clean, but rather red; his countenance was wild and reddiſh; his ſpeech ſhort, haſty, and interrupted, and he bit his under lip. His mother complained that the lad was ſo ſtrange, uneaſy,

[p] The urine was a clear lemon colour, with a bright cloud, a few hours before his death.

uneaſy, that he would not drink, although he ſaid he was thirſty. I then ſuſpected a madneſs (rabies) and deſired his mother to endeavour to give him tea in my preſence; but at ſight of it at a diſtance he puſhed it away with both his hands, and ſaid, with a ſcream, that he could not drink; at which time alſo the wildneſs of his countenance increaſed. At his mother's earneſt entreaties he took a tea-ſpoonful of tea into his mouth, but made a wry face, and ſpit it out again immediately. I aſked if he had been bitten by any dog, which both he and his mother denied; but ſhe thought that the lad had fallen privately into the water, as he was very giddy and raſh, and from thence had derived the dread of water, which he however entirely denied.

Bleeding in the arm was immediately ordered, and I deſired his mother carefully to inquire if there were any mad dogs in the houſe or neighbourhood, with which he at leaſt might have played. At four o'clock, P. M. I returned: he was bled about eleven, and about four ounces of blood taken, which was without cruſta inflammatoria. The ſymptoms had at firſt abated a little, but were afterwards, by degrees worſe; and were now increaſed, with

ſo

ſo great a dread, that he could not bear any one to approach to him, ſcarcely his own parents; nor any perſon to be in the room with him, wiſhing rather to be alone. He ſaid alſo of himſelf, that all ſenſe, at times, left him. At this time his mother informed me, that ſhe had made inquiry, and learned that a little lap-dog that the lad was fond of, had ſhortly before been ſick, and died on the 12th of June. The night before it died the dog lay with him in bed as uſual; but he had been obliged to tie him, becauſe the dog was ſhy and fierce, and did not know his maſter: it had alſo convulſions, bit its tongue, foamed at the mouth, and looked mad. The lad had, during the ſickneſs of the dog, which continued ſome days, carried, handled, and probably kiſſed it, becauſe he had complained to other people of the dog's ſtinking breath. A week afterwards another ſimilar little dog ſickened in the ſame houſe, in like manner, and died on the 26th of June: but as this belonged to other people, the lad had not handled it till juſt before his death, when he had patted his head and back, but denied having been bitten by either. I examined his body, but found no hurt, except a lit-

a little rawneſs at the bottom of the back bone (ſpina dorſi).

As the diſorder was now clearly a *Hydrophobia e cane rabido*, becauſe the breath and ſaliva of mad dogs is looked upon as moſt poiſonous and infectious,[q] I repreſented to the parents in what danger the life of the lad was, and deſired them to ſend for their uſual phyſician, Dr. Martinau, who was however not met with. I preſcribed in the mean time half an ounce ungt. merc. ph. ſo. which ſhould be rubbed on the arms and legs after he had previouſly ſat at leaſt half an hour in a lukewarm bath, when a ſheet was wrapped round his neck to conceal the water from his eyes; after which, the body to be dried, and the ointment to be uſed. At ſeven o'clock the ſame evening I returned; every thing I ordered had been performed, but the ſymptoms increaſed rather than diminiſhed: now, beſides what is beforementioned, ſtrong belchings, or noiſes in the belly, were heard: the noſtrils were contracted, and the underlip was more conſtantly bitten, with a ſmall ſpitting, and the ſenſeleſsneſs in-

[q] Two caſes where the Hydrophobia aroſe only from the licking of mad dogs. Vide Soc. Hafn. Collect. Med. vol. 1, page 273.

increaſed. In conſequence of the gripings a well-ſalted clyſter was applied, which had a good effect. A bolus was brought from the apothecary's, which conſiſted of two grains of opium, and ten of muſk, which was ſwallowed with ſome difficulty; upon which he ſucked eagerly the corner of a piece of linen, which was dipped in rheniſh wine: he alſo endeavoured, in conſequence of the violent thirſt, to ſquirt himſelf with ſome of the ſame wine, but could not retain a ſingle drop. I alſo adviſed his being bled again, or having leeches applied to his neck. At ten o'clock the ſame night I returned to the patient; all the ſymptoms were ſtill worſe, eſpecially the dread of people. Bleeding or leeches had not been applied, becauſe the patient conſtantly refuſed. I urged the neceſſity of them in a degree to eaſe the oppreſſion of the breaſt. The Hydrophobia was ſo violent, that the leaſt moiſture applied with a feather to the dry lips, increaſed the convulſions. It was not poſſible to bleed him before two o'clock in the morning; but then it was effected after the convulſions had extended themſelves both to the hands and feet, and deprived him of all ſenſe. The blood now taken, to a quantity of three

ounces,

ounces, had alſo no cruſta inflammatoria; but this gave no eaſe; on the contrary, the convulſions were now inceſſant; no ſenſes could be diſcovered; violent ſcreams, with an enfeebling of the ſpaſms, and a coldneſs of the extremities foreboded death; and about eleven o'clock A. M. of the 30th of June, he expired quite calmly.

The corpſe became fœtid very ſoon. On laying it out the following day, lived ſpots and bliſters of blood were obſerved on the breaſt, and about the neck.

The following remarks ſeem to offer themſelves from the preſent caſe.

1ſt. At neither of the bleedings the blood appeared inflamed: the diſorder therefore is not in the humours, but in the violent agitation of the nervous ſyſtem, by a peculiar poiſon, which attacks the breaſt and throat. When a fever ariſes it muſt, in ſuch caſes, be a conſequence of ſpaſms from the irritation of the arteries, as clearly happens in the ſmall pox, venereal diſorders, and after the operation of the cataract. Is therefore methodus antiphlogiſtica the proper remedy? Is it not deſirable for us to diſcover ſome powerful medicine for quieting the nerves, as would be able

to

to quell this powerful irritation? It appears that aſſiſtance ought to be expected from this laſt claſs of remedies.

2nd. The Hydrophobia did not appear before the violent oppreſſion of the breaſt at noon, on June the 28th, although the poiſon clearly acted from the morning of the 24th of June: it is therefore a conſequence of a more violent degree of irritation where ſpaſms ariſe in the throat, breaſt, and face.

3rd. If mercury, which has hitherto been regarded as the moſt certain means of preventing the Hydrophobia, when uſed in time, acts as a ſpecific againſt the poiſon, as in venereal diſorders, it is however ineffectual when the Hydrophobia has diſcovered itſelf.

Finally. I ought alſo to mention, that two other children in the ſame houſe, a daughter of 20, and a ſon of 14 years of age, were bitten on the left noſtril by the mad dog that died laſt, ſhortly before his death; but the bite neither drew blood, nor cauſed pain; neither was there the leaſt mark when I examined the place on the 29th of June. As however there might be danger of unfortunate conſequences, they both the ſame evening began to uſe mercury, as well *in*, as externally, together with bleed-

bleeding and cooling purges, of the reſult of which I may hereafter probably give an account.

Caſes epitomiſed from different Authors.

CASE XVI.

Dr. Ferriar's firſt patient, John Johnſon, aged 39, bitten by a dog in the left cheek, about the end of Auguſt, 1790.[r]

This happened near Mancheſter. Dec. 3 was brought to the Infirmary.

Symptoms. Dr. Ferriar examined him on admiſſion, and found tongue white, pulſe irregular and weak; body tremulous; eyes wild; fearful, timorous, and on the watch, as it would ſeem, againſt ſudden ſurpriſes. Complained of ſome cough, pain of cheſt, diſpnœa; but avoided mentioning dread of water; ſaid he had been twice bled and bliſtered on the ſide the preceding week. Four days ago firſt felt difficulty of ſwallowing: at preſent this was his chief complaint. Attempting to drink, muſcles

[r] Vide Medical Facts, vol. 1, page 1.

cles of face convulſed; and a gulping at ſight of water: ſwallowed ſolids with eaſe; great uneaſineſs about his throat from the cold air: ſlight incoherency in converſation; ſcar from wound trifling; ſtarted at the ſound of water poured from a veſſel; then recollecting himſelf, ſaid he was not afraid of water. 9, P. M. More incoherent; complained of cold; during the night intractable; incoherent; attempted to get out of bed; ſcratched the hand of an attendant who replaced him.

4th. 9, A. M. Leſs difficulty in ſwallowing; had taken a pint of a mixture ordered, and ate ſome porridge: eyes heavy, inclined to fix; pulſe much ſunk; tendency to low delirium; "retched ſeveral times, and brought off ſome wind." 10, A. M. Threw up part of a mixture juſt taken----convulſions----death.

Treatment. Bolus of a ſcruple of bark, ſix grains of muſk, half a grain of opium. Cold bath; directed to ſwallow, as often as poſſible, a mixture of vinegar and water. Conſultation held----reſult. Scarify the cicatrix deeply; apply a bliſter over; take every four hours in bolus a ſcruple of bark, fifteen grains of muſk, two grains of opium: rub ſtrong merc. oint. two drams into throat, arms, and groins: alſo take

take three or four large ſpoon fulls, as often as poſſible, of diſtilled vinegar eight ounces, decoct. cort. per. twelve ounces: apply to the throat a plaiſter of galbanum three drams, opium two ſcruples, camphor one dram. He took of theſe medicines a conſiderable quantity, but without relief.

N. B. From the time of the accident to the appearance of the diſeaſe, he had been twice afflicted with complaints, ſuppoſed to be pleuritic, which were removed by bleeding, bliſtering, and other remedies.

CASE XVII.

Dr. Ferriar's ſecond patient, aged between 40 and 50 years, bitten by a dog in the right thumb, about the 26th of July, 1796.[s]

Was brought into the Mancheſter Infirmary, October the 12th, from Salford, near that town, being the ſixth day of the diſeaſe, and died the ſame day.

Prophylactic. Apprehending no danger, no prophylactic was uſed.

Symp-

[s] Vide Med. Hiſt. and Reflections, vol. 3, page 5.

Symptoms. October 6. Deglutition ſlightly affected. This day delirium; complained of the cold air when the door was opened; and of his throat, imagining it to be ſwelled: timorous; ſtartled at every noiſe; thought himſelf harraſſed by witches, dogs, and other annoyances. Some convulſions on the 4th day of diſeaſe; attempted no violence, though his phrenzy rendered it difficult to hold him. Did not remember the bite, nor ſuppoſed his illneſs aroſe from it, till the day before his death, and then only recollected when interrogated on the ſubject. It rained when he was about to proceed to the Infirmary, which affected and diſturbed him: ſtrength at this time ſeemed not very greatly impaired, as he declared, that but for the rain he would walk to the Infirmary, inſtead of being carried in a hackney coach procured for him. Left the carriage at the gate, and walked through the garden to the Infirmary, under much agitation from the ſhower. A little after entering, convulſions: much ropy ſaliva for the firſt time; died ſoon after, before the Doctor could arrive.

Diſſection. This, to the Doctor's regret, (and the public will readily join in it,) was deferred,

red, through miſplaced delicacy of friends, for about 24 hours. Leave at length being obtained, the appearances were,

Externally. Corpſe remarkably pale, cheeks excepted, which were ſomewhat livid.

Internally. Head----effuſion of fluid between the pia mater and tunica arachnoides, conſiderably diſtending the former. No preternatural quantity in the ventricles; pineal gland contained ſabulous matter, with a curious appearance of oſſification on one of its pedunclés.

Thorax. Some adheſion of the pleura covering the right lobe of the lungs to that lining the ribs on the ſame ſide. "The left lobe was ſo completely filled with blood, as to have acquired conſiderable weight and ſolidity."

Abdomen. Liver changed in colour, and ſtreaked with white ſpots.

Stomach. Much inflamed, eſpecially on the great curvature: villous coat inflamed in irregular points, with an appearance of abraſion ſimilar to thoſe found in the Doctor's former patient: inflammation did not extend beyond the villous coat; for, cutting into the muſcular coat, it was found quite ſound.

Pylorus----ſound.

Œſo-

Œſophagus---found.

From the above appearances Dr. Ferriar is inclined, contrary to his former opinion, to conſider the diſeaſe as of an high inflammatory nature, analogous to peripneumonia.

No notice is taken here of the heart. This omiſſion is to be regretted.

CASE XVIII.

Mr. Johnſton's patient, Thomas Hogg, aged 33, bitten by a dog in the right leg, and right hand, on the 13th of December, 1793.[s]

This patient lived in the neighbourhood of Dunbar, where the accident happened. This unfortunate man poſſeſſed both fortitude and humanity. When the dog ſeized him, he caught the creature by the two jaws, and held it faſt. Being deſired by a fellow ſervant, who came to his aſſiſtance, to let it go, he refuſed till it ſhould be killed, replying, "that if the animal was mad he was as ill as he could be; but

[s] Vide Med. Comment. D. ii. vol. 10, page 264.

but that if he let it go, it might do more miſchief." It was killed while he held it.[t]

Prophylactic. Wounds bathed with warm milk and water; the bleeding encouraged; wounded hand poulticed; extirpation of the bitten parts in leg; extirpation alſo of bitten part on palm of hand; lunar cauſtic to the ſcratches of finger and back of the hand; ſuppuration encouraged;[u] antiphlogiſtic regimen inculcated; mercurial pill ordered; wounds dreſſed with mercurial ointment; took Ormſkirk noſtrum. Notwithſtanding theſe precautions Hydrophobia took place.

Symptoms. Jan. 9, 1794. Some uneaſineſs; ſhivering; could not keep himſelf warm; ſome thirſt. 11th. Some hardneſs, with numbneſs round the wound in the leg; hand and fore arm alſo uneaſy; now with a pricking ſenſation, and now with ſleeping: viſited to day ſeveral friends with Mr. Spence, who has lent his medical aid in conſultation. He appeared to Mr. S. "uncommonly cheerful, diſtinct, and collected." 12th. Wound in hand uneaſy;

[t] For inſpection of this dog's ſtomach, vide vol. 1, p. 28.

[u] Vide vol. 1, page 155, for probable reaſons for the want of ſucceſs.

eaſy; ſqueezed ſome matter from it; pricking pain extending to the elbow. 13th. Viſited at four miles diſtance, and dined with his father; returned in the evening. 14th. In ſeeming health; drank ſome beer without inconvenience. 15th. "This morning he was ſeized with a nauſea, and ſtrong deſire to vomit; and in the forenoon occaſionally brought up mouthfuls of what they termed yellow ſtuff, which to him had a bitter, ſour, diſagreeable taſte." Oppreſſion about pit of ſtomach, breaſt, and bowels; drank without averſion. 10, P. M. Pulſe 80, ſmall and hard; deſirous to ſleep. 16th. Pulſe 100. He is fretful and uneaſy; no ſleep laſt night; oppreſſion at pit of ſtomach; afraid of fainting; fluids refuſed. 3, P. M. Profuſe ſweat ſince morning; afraid to take food or liquids, from pain at the pit of his ſtomach. "He had nauſea, and at times attempted to vomit." Pulſe 90, hard and firm; deglutition difficult on attempting to drink. About 5, P. M. "Frequently had a deſire, and did retch repeatedly during the operation of a laxative given, and at firſt brought up only a few mouthfuls of bile; but what was vomited afterwards appeared to be only the mucus of the ſtomach." Irritability increaſed;

ſighed

ſighed often; cold air, whether by motion of perſons through the room, or by opening a window, offenſive; "he repeatedly declared it was killing him; at other times he ſaid it was taking away his breath, and like a knife entering his ſtomach and breaſt: even the ſenſe of ſmelling was preternaturally increaſed." A perſon approaching was requeſted to withdraw, becauſe he ſmelt of ſpirits. 8, P. M. Perſpiration continues. 17th. Laſt night reſtleſs; towards morning pulſe augmented to 110; conſtant danger of fainting. 12, A. M. Pulſe 90, hard and ſmall; he is perfectly collected; could not bear the barking, or mention of a dog; ſometimes cold air agreeable, ſometimes the reverſe; "it went to his heart like a knife;" whenever convulſions of the ſtomach and diaphragm recurred, would call out to open the window, to relieve him from ſuffocation; and then, with a niſus to vomit, would bring up ſomething like mucus and ſaliva, evidently very offenſive to him: ſaliva copious, and forcibly ejected, not at any perſon, but in the poſition in which his head lay; morbid ſenſibility of touch is a great obſtacle in the adminiſtration of an enema; contraction of the rectum; when injected fell into convul-

ſions from the touch of the fluid; paſſed urine involuntarily after enema with T. op. ſhort interval of eaſe; convulſions, with more copious flow of ſaliva forcibly ejected in mouthfuls; frequent ſighing; refuſed farther relief; told his doctor, that what time he had left him he would employ in ſupplicating interceſſion with Chriſt; called his family round, and bid them farewell; was rational to the laſt in the intermiſſion of convulſions, and perfectly reſigned. 4, P. M. Convulſions ſtronger; in the fit outrageous, requiring two men to hold him; pulſe at wriſt indiſtinct; evident pulſation of the temporal artery; ſalival diſcharge ſtill increaſing, with mucus from the ſtomach, "inſomuch that his conſtant employment was ſpitting and vomiting." 6, P. M. Death.

"No enlargement about the throat or ſalivary glands could be obſerved; no inflammation was evident about the mouth, nor was there any enlargement of the tongue. We were not permitted to inſpect the ſtomach, bowels, or thorax."

Treatment. 15th Evening. An emetic. 16th Purgative of caſtor oil; "it produced a moſt offenſive and bilious ſtool, followed by five others equally offenſive and bilious." 17th.

At

At noon, ordered an enema of T. op. three drams, beef tea four ounces, every two hours.

One only could be given: anoint breaſt, ſtomach, and belly with the ſame.

CASE XIX.

Mr. Simmons's patient, Mary Strong, aged 43, bitten by a dog on the middle finger of her left hand, about the 23d of June, 1793.[v]

This was in London. Symptoms----Auguſt 21, ſome difficulty in ſwallowing. 23d. Mr. S. firſt ſaw her; horror now at the ſight of water; could ſwallow ſolids; ate an apple in his preſence; pulſe natural; thirſt great. 24th. Night reſtleſs; pulſe conſiderably quicker; an almoſt impoſſibility of ſwallowing; diſtreſſing convulſions at the attempt. 25th. About one P. M. Laſt night ſtill more reſtleſs; diſcourſe incoherent; hiccuped; ſpat often a viſcid ſaliva; foam about mouth; pulſe not perceptible; countenance wild; ſpeech altered. 3, P. M. Death. A little before this event "ſhe vomited

[v] Vide Med. Facts, vol. 5, p. 87.

mited about a pint of ſomething like coagulated blood."

Treatment. Ordered a clyſter; repeated afterwards; ordered an opiate pill; alſo friction, with merc. oint. Little opportunity afforded for practice in this caſe.

CASE XX.

In Edinburgh Royal Infirmary: a woman, aged 74, bitten by a dog, on the hand, July 3, 1792.[w]

This patient continued well for 73 days, i. e. from July 3, to Sep. 13, and the diſeaſe did not prove fatal till four days from the commencement.

Prophylactic----none mentioned.

Symptoms. 1ſt. Pain in cicatrix, ſtretching up the arm. 2nd. Shivering, heat, thirſt, nauſea, and other febrile ſymptoms in ſucceſſion. Next day (Sep. 14) Difficult deglutition perceived; ſymptoms increaſed, "with all the other attendants of rabies." Brought next day (15th) at

[w] Vide Med. Comment. D. ii. vol. 7.

at 7, P. M. to the Royal Infirmary. 17th. Death.

Treatment. Opium, æther, camphor, with "other powerful antiſpaſmodics."

Diſſection----none mentioned.

CASE XXI.

Dr. Benſell's patient, ----- Niece, a girl between 7 and 8 years old, bitten by a dog in the face, arm, and ankle, March 30, 1792.*

This was near Germantown, in America. It is of importance to notice the ſtate of the dog at the time of the accident. Some indiſpoſition was obſervable, but by no means diſtinguiſhable in its nature, nor indicative of the neceſſity of ſecuring him previous to the accident. They would doubtleſs have found, had they made the experiment, that he would neither, at this time, have refuſed meat nor drink, a fallacious rule of judging of madneſs in this animal, credited for ages paſt.

Symp-

* Vide Tranſ. of Coll. of Phyſicians, Philadel. vol. 1, page 238.

Symptoms. April 16, Dr. Benſell firſt called; patient indiſpoſed for 16 hours paſt, accompanied with ſlight impediment in deglutition; had been bitten 19 days before; uncommon apprehenſion at the approach of objects; ſkin moiſt; heat moderate; pulſe ſomewhat quickened; tongue partially white, not dry; intellects ſound; countenance marked with a peculiar dread and wildneſs; pupil uncommonly dilated, yet the light fell upon the eye in a direction favourable to produce contraction; no thirſt; a cup of water poured out at the other end of the room threw her into great agitation; a trial to ſwallow produced deep ſighing and ſobbing. Evening. Little alteration; pupils remain unnaturally dilated; whiteneſs of tongue not more extended, but appeared in ſpots; its moiſture undiminiſhed; pulſe regular; no thirſt; natural heat over the body. 17th. Symptoms the ſame, only deglutition freer. 3, P. M. Apprehenſion at the approach of objects increaſed; deglutition very difficult; convulſed when a fluid is preſented; danger of ſuffocation if it touched the fauces; pulſe continues moderate; heat of body the ſame; tongue little altered. Evening. A dog entered the room; frightened at the ſight, requeſting

queſting the animal to be turned out. 18th. Begged to be dreſſed, in which ſhe was indulged; countenance florid till to-day, now pale; pupils even more dilated than before; conſcious of illneſs, yet declared ſhe felt no pain; ſeemed rejoiced at ſeeing Dr. Benſell; pulſe now became lower; ſpaſms now more frequent. 4, P. M. Great aggravation of ſymptoms; convulſion suniverſal; pupils ſo dilated, that only a line remained to diſtinguiſh the iris; pulſe ſcarcely to be felt; tongue changed to brown, yet even now her intellects perfect; hitherto little or no phlegm thrown up, but now an extremely quick vibratory motion of the tongue produced ſome froth about the mouth; dread of every thing greatly augmented. "At this time a quantity of viſcid phlegm was at intervals brought up, generally tinged with blood." As this multiplied, the difficulty of ejecting it increaſed, till at laſt every muſcle ſeemed employed in the exertion. 6, P. M. Froth more multiplied, yet when wiped away ſhe would ſpeak to her parents rationally. 11, P. M. Death.

Treatment. Eight drams of ſtrong mercurial ointment rubbed in during the diſeaſe; warm bath frequently; bliſter over the ſcar, but

but no inflammation was produced, either under the plaiſter, or on ſurrounding parts; no pain either before or after application of bliſter; no morbid appearance on the wound.

Prophylactic. A celebrated noſtrum ſold by Goodman of Philadelphia was adminiſtered, according to the directions, ſoon after the accident.

CASE XXII.

Mr. Scruton's patient, a girl 8 years of age, bitten by a dog, March 21, 1792.[y]

This took place at Glaſgow: no mention is made of the part in which the wound was given, whether it was about the face, fore part of the neck, arm, leg, &c. To know this is of ſome importance: we are enabled thereby to judge, when an unſucceſsful operation is performed, as in the preſent inſtance, what were the obſtacles, ſtill concluding that the ſurgeon has omitted nothing neceſſary to render the operation complete.

Pro-

[y] Vide Med. Comment. D. ii. vol. 7.

Prophylactic. Mr. Scruton removed the bitten part; next ſupported a diſcharge for ſome length of time; laſtly, adminiſtered calomel, keeping up a ſalivation for a week or two; yet the diſeaſe appeared April 27, or 38th day from the accident; and the child died on the 29th.

Symptoms. In the ſketch from whence this is extracted the ſymptoms are not detailed. It is only ſaid, that the patient was affected with "Hydrophobia, and other ſymptoms of rabies contagioſa."

Treatment. This is omitted likewiſe.

CASE XXIII.

Dr. Shadwell's patient, Joſeph Wyburn, aged 15, bitten by a dog in the left hand, 1790.[z]

This took place in the vicinity of Brentwood. In this we have another inſtance of the futility of that obſervation reſpecting the refuſal

[z] Vide Mem. of Med. Soc. Lond. vol. 3, page 457.

ſuſal of a mad dog to eat or drink in the early ſtage of the diſeaſe. The animal by which this lad was bitten ate bread and milk, its uſual breakfaſt, the moment before.

Prophylactic. The Ormſkirk noſtrum was taken, and ſea bathing uſed.

Symptoms. Dec. 14, Pain in the left ear. 15th. Pain extending to the tonſils; dull; ſeemed to avoid company; able to drink; ſlept as uſual this night. 16th. Went to his uſual employ, but appeared, as they termed it, comical. This night ſcreamed out; hurried out of bed, called out, "thieves," and imagined he ſaw lights and perſons in the ſtable. 17th. Shuddered at the ſight of milk offered him; ſhuddered and turned away when offered tea, clinging through fear to the mantle piece of the chimney; ſaid he was ſtifled by the cold air; "and, to the aſtoniſhment of the ſpectators, he ran up ſtairs, as faſt as could be conceived, backwards," in order to ſhun it: fell into convulſions; paſſed ſome drops of urine, and, exhauſted, fell into a ſwoon; became furious, and was bound down in bed; thirſt great. 18th. Symptoms worſe. 19th. Evening. Dr. Shadwell firſt called; at this time the body was writhed and convulſed; pupils amaz-

amazingly dilated; nails of fingers and toes perfectly bleached; "ſaliva ſtreaming from each ſide of the mouth;" rigidity of every muſcle; ſhrieked loudly; pulſe low; ſkin cold to touch, yet complained of burning oppreſſion, with lancinating pains about the region of the ſtomach. Tongue. "Nothing particular appeared, but a lead-coloured ſtripe running along the middle of it:" rational in the interval of fits. 20th. "Complained to me of great ſtoppage in his throat, and load at his ſtomach, and ſaid he could vomit if carried into the air:" pulſe not to be felt; ſkin livid. "After ſome violent paroxyſms, the ſaliva ſtreaming more copiouſly than ever from one ſide only of his mouth," Death. This took place at 11, P. M.

Treatment. On the 19th was anointed with oil from head to foot; oil ordered internally, but could not ſwallow any. Dr. Shadwell reaſoned with him perſuaſively to try; he conſented, but it being preſented, "he wept bitterly, turned his head away from it, and declared his deſire rather to die than to attempt any farther endeavours at drinking." 20th. Was thrice anointed during laſt night; no oil internally; for the very mention of it made him out-

outrageous. Enemas ordered of oil and fat mutton broth; one only adminiſtered, and with the greateſt difficulty.

N. B. No priapiſm; never loſt his recollection; knew the by-ſtanders; when aſked to name them, he pointed to each; wound not inflamed, but he ſaid it felt rather ſore; ſwallowed nothing from Saturday till death; retained his ſight notwithſtanding the great dilatation of pupils.

Diſſection----none permitted.

CASE XXIV

Mr. Weeks's patient, George Cobb, bitten by a dog on the right cheek, and inſide of the upper lip, Nov. 29, 1789.[a]

Mr. W. ſaw him immediately after the bite, but could not perſuade him to have the parts that were bitten extirpated. The Ormſkirk medicine was adminiſtered, and the Birling medicine was alſo given. The lad continued in

[a] Vide Med. Facts, vol. 3, page 35.

in health for ten days after the bite, and the wounds healed; but on the 10th of December ſymptoms of Hydrophobia appeared. The Birling medicine was now again adminiſtered; but by two o'clock of the morning of the 12th of Dec. the patient appeared quite exhauſted by the violence of the ſymptoms, became quiet, and died in about half an hour after.

Treatment----none attempted.

CASE XXV.

Mr. O'Donnel's patient, John Slight, aged 23, bitten in the calf of the right leg by a dog, on the 7th of Oct. 1788.[b]

Prophylactic. Cauſtic to the part; diſcharge kept up for a month; mercurial ointment daily for the ſame time; Ormſkirk medicine according to rule; and it is added, to inſure ſucceſs, he took doſes of double the common quantity.

Symptoms. Dec. 5, ſixty days after, became firſt affected: cold ſenſation in the foot of

[b] Vide Med. Communicat. vol. 2, page 290.

of bitten leg. 6th. Same ſenſation extending to knee; otherwiſe well. 7th. Numbneſs extending up the thigh. 8th. As yeſterday. 9th. Very ill; took to bed; thirſty. In the evening, dull, dejected, trembling as he ſat by the fire; bitten leg now ſomewhat ſwelled. 10th, in the morning, horror to fluids: this forenoon pain of hip and ſide bitten; pulſe quick and weak; tongue moiſt, red in the middle, and white at each ſide; laſt night ſleepleſs; ſkin moderately warm, ſomewhat moiſt; deglutition difficult; patient had no apprehenſion of Hydrophobia. 9 in the evening, pain in the loins gone; eyes penetrating; darted them with uncommon quickneſs on the viewed object; no pains, at this time, in any part; pulſe now 130; agitation increaſed; tongue and ſkin as before; diſtreſſed at the bare mention of drink. 11th. Noon, cannot look at his urine; had ſlept ſome time; perfectly rational; pulſe irregular, weak, quick. 2, P. M. more reſtleſs; temper changed; ſtruggled with his attendants, bit the finger of one, and ſcratched the other with his nails; became violent, with the ſtrength and fury of a mad man; was confined by the ſtrait waiſtcoat; foamed at mouth; aſpect terrible; coughed

conſi-

conſiderably in ejecting ſaliva; voice ſomewhat reſembling the coughing of a dog with a bone in his throat; ſenſible now of his ſituation, but threatened the by-ſtanders if they refuſed to unbind him. Eight o'clock, every thing worſe; ſoothing language judiciouſly uſed by the ſurgeon. This brought him to reaſon, and his anſwers were now pertinent: involuntary emiſſion of urine; begged not to be ſmothered; put out his tongue when deſired, which appeared greatly enlarged. 11, P. M. Delirium *mite*, reſembling what is ſeen in typhus; face of the bitten ſide ſwelled, ſo that the eye ſeemed cloſed; other ſide free from ſwelling. Death, half paſt 12; continuance of Hydrophobia thirty-nine hours and a half.

Treatment. 10th. Bolus of muſk ten grains, opium two grains, every four hours. No ſleep from the bolus. 9, P. M. Ordered to continue bolus, and to rub half an ounce of ſtrong mercurial ointment on the throat. 11th. Noon. Camphor a ſcruple, opium ſix grains, in a bolus; rub an ounce of mercurial ointment into the throat. 4, P. M. Bolus of ſix grains of opium.

CASE

CASE XXVI.

Dr. Gray's patient, a ſlave boy, aged 12, bitten by a dog on the left thigh, the left arm, and on the back, about Nov. 25, 1786.[c]

This was at Bengal.

Prophylactic. Dr. G. did not ſee the patient till Dec. 15, or about three weeks after the accident. He found five large ulcers on the thigh ſtill open; on left arm two ſmall cicatrices, and one on back; pulſe at this time ſmall, quick, and ſomewhat frequent; bowels regular; head-ach, with chilline ſs. Lunar cauſtic to the ulcers of the thigh; bliſters to cicatrices of arm and back; frictions, with mercurial ointment to thighs and body; alſo every three hours a pill of half grain opium, and one grain calomel. 16th. In the morning, was in health; little or no fever; appetite good; ulcers on thigh diſcharging; cicatrices on arm and back alſo opened. On theſe being opened by bliſter, "ſmall but deep ulcers ap-

[c] Vide Med. Comment. D. ii. vol. 2.

appeared underneath, while the neighbouring parts, that were equally affected by the plaiſter, were ſcarcely inflamed." Ulcers fumigated with cinnabar; eſcharotic applied of half bliſtering plaiſter, half diachylon. Warm bath ſeveral times to-day, for 30 minutes each time. Evening. Gums ſore; pills continued. 17th. In the morning. Reſted well laſt night; little or no fever; appetite good; gums red and ſwelled; ſaliva increaſed. Ulcers diſcharge as yeſterday; fumigation repeated; warm bath now and then; paſſed this night well. 18th. In the morning. No alteration, except more ſaliva, with ulceration on edge of tongue. This and the ſaliva aſcribable to mercury.

9, P. M. Symptoms of diſeaſe firſt appear; pulſe rather quick and frequent; ſubſultus tendinum; reſtleſs night. "Sleep every moment interrupted with frightful dreams of horſes fighting, and going to eat him up." 19th. In the morning. Looked fatigued; pale, yet appetite good; chilly frequently; uſed warm bath frequently; ſaliva and gums as yeſterday; ulcers diſcharged as before; febrile ſymptoms increaſed. Night. Perfectly ſleepleſs. 20th. In the morning. Fatigued for want of

reſt laſt night; difficult deglutition this morning, but ſwallowed ſome liquid. "Eyes had a peculiar keeneſs, and appeared luminated, moving with extraordinary rapidity; and all his actions were performed with a remarkable degree of quickneſs." When ordered warm bath "ran with the utmoſt precipitation and timidity." Pulſe ſmall; frequent; every now and then ſhrinking from his attendants; often mentioning the word *cuta* (dog) without appearing ſenſible of being hurt by that animal; appetite ſtill good; ſwallow ſolids with little difficulty; unſuſpicious of danger; he hoped ſoon to be well; this night greatly agitated; paſſed it without cloſing his eyes. 21ſt. In the morning. Attempting to ſwallow water; convulſions; contortions of face; danger of ſuffocation; yet ſwallowed a little water from a ſpoon; ſwallowed ſolids with leſs difficulty; devoured ſome bread and butter voraciouſly; yet went frequently into warm bath, feeling cold when out of it; pulſe frequent and ſmall; gums and tongue ſwelled and ſore; ſpitting diminiſhed; convulſions of face increaſed; eyes rolling extremely, "as it were with dread of the objects near him; ſhrinking back, at the ſame time puſhing his hands out before him, ſeem-

ſeemingly to ward off ſome diſagreeable object." Theſe fits momentary only; could give no reaſon why he was ſo affected. 12, A. M. Fits more ſevere, both in and out of warm bath; thirſt inſatiate, but horror and convulſions over his whole frame on attempting to drink. 6, P. M. Could no longer go into the warm bath; the name of both liquids and ſolids excited fits. "During the laſt 24 hours he complained of acute pains ſhooting from the ulcers of his arm to the neck, breaſt, and head; but had no uneaſineſs from thoſe of the thigh or back." 8, P. M. Pulſe at wriſt not to be felt, while ſtrong throbbing and pulſation continued at his heart, with extremities cold to touch; outrageous and frantic during fits, ſcarcely to be held by three men; exacerbation of fits every moment; cheſt now convulſed; the air at this time forced out of his lungs with a convulſive noiſe; ſmote now his breaſt often, "crying out that his inſide was on fire;" kept calling out at this time to his God, in his native language, to deprive him of life, and relieve him from miſery. "From ten o'clock in the evening, till four o'clock in the morning of the 22nd, when he died, he had continual efforts to vomit, but without effect."

Unleſs

Unleſs during the fits, his intellectual faculties were not the leaſt diſturbed."

Treatment. This is comprehended in the prophylactic, and in the ſymptoms. To what is found there may be added the application of a bliſter to the fore part of the throat when deglutition became impeded, which, after three hours, removed the impediment for a time.

In this caſe the warm bath had the fulleſt trial, not only from the 15th, which was three days before the diſeaſe appeared, but throughout its duration. The bath was kept conſtantly warm, and the boy was accommodated with a contiguous apartment for the purpoſe. He bathed frequently every day, even to the laſt.

CASE XXVII.

Mr. Dundas's patient, Henry Rider, aged 40, bitten by a dog in the wriſt, Aug. 1785.[d] The accident happened in the neighbourhood

[d] Vide Lond. Med. Journal, vol. 8, p. 156.

hood of Richmond. Rider immediately ſhot the dog (it was his own) "it having bit a pig, and ſhown an inclination to bite all who came near it."

Prophylactic. Some hours after the accident he applied to Mr. Dundas. "As the wound was inconſiderable, and there was no certain proof of the *madneſs* of the dog," Mr. D. dreſſed with common cerate; adviſed Ormſkirk powder, which was taken next day; applied the ſame to the wound, as ordered by printed directions; bathing in the ſea in the uſual way recommended; remained well for about 18 months; end of Dec. 1786 failed in buſineſs (kept an alehouſe) to avoid creditors abſconded; remained in London.

Symptoms. Feb. 23, 1787, dining on tripe with friends, ſuddenly imagined a piece to have ſtuck in his throat; tried to drink ſome porter at table, but could not: in a ſecond attempt was almoſt ſtrangled: walked home; felt rigors and oppreſſions; could not go to bed. 24th. At breakfaſt ſwallowed ſome bread and butter; could not ſwallow tea. Afternoon went to Richmond; conſulted Mr. D. imagining the tripe eaten yeſterday ſtill to ſtick in his throat; hoped he would be able

to

to puſh it down; but his wife acknowledged a dread of the bite haunted him. On aſking him whether he felt uneaſineſs in the wound made by the dog, anſwered Mr. D. "he perceived what his opinion was, and was ready to ſubmit to his fate:" was agitated, oppreſſed: complained of weight at ſtomach; indiſcribable anxiety; pulſe quick, ſmall; eyes wild; little head-ach; great thirſt: attempted to drink in Mr. D.'s preſence; violently convulſed; touching water with his hand had nearly produced the ſame. No diſcoloration or ſwelling in bitten wriſt; but ſaid it had itched for ſome days: Hydrophobia had continued 27 hours. 25th. Had not been in bed laſt night; retired to corner of room; looks wild; pulſe very quick; made an uncommon noiſe; admoniſhed thoſe about him not to fear him, but wiſhed not to be ſpoken to: ſight of a ſtranger agitated him. About noon became unruly; bound now in ſtrait waiſtcoat; paroxyſm yielding, he became more quiet; was oppreſſed in mind; "imagined he was to be ſmothered betwixt two feather beds:" at each viſit from Mr. D. was alarmed, leaſt this ſhould be ordered: this idea he could not baniſh; concealed his complaints from Mr. D. on this ac-

account; continued ſenſible till next morning, (26th) at four; gave orders about his funeral; took leave of his wife; fell into convulſions; in a few minutes dead.

Treatment. Feb. 24, bled in London in the morning; took ſome purging pills. Evening. Mr. D. was conſulted: bliſter to back; merc. oint. an ounce, to be rubbed into legs and arms every two hours; enema of T. fœtid. an ounce, T. op. 50 drops, every four hours; Turp. mineral recommended; could not ſwallow it.

Diſſection. Brain----no marks of diſeaſe.

Pharynx, and neighbouring parts, without inflammation.

Œſophagus and trachea were both covered with a thicker mucus than uſual. Mr. D. thinks this explained by the patient's inability to ſwallow for 56 hours.

Left lobe of lungs, and great lobe of liver, *appeared* inflamed; the other viſcera healthy.

CASE

CASE XXVIII.

Mr Haighton's patient, William Macey, 5 years old, bitten by a dog in the right ear, Aug. 4, 1785.[e]

This happened in Kent-ſtreet, Southwark. Wounds extremely ſlight.

Prophylactic. Wound dreſſed with ſome common cerate.

Symptoms. Aug. 24. Pain in the cicatrix, but no inflammation, and the place ſcarcely to be diſcovered: a few hours after great uneaſineſs in the epigaſtric region; took food as uſual this day; ſlept a little at night. 25th. Pain in abdomen continues; laborious reſpiration commencing; refuſed all refreſhment: this night no ſleep; conſtant reſtleſsneſs. 26th. 1, P. M. Mr. Haighton firſt viſited; child ſat on a woman's lap; face then pale; eyes fixed; horror of countenance; pupil dilated, yet in a ſtrong light capable of great contraction; heat of body moderate; tongue moiſt, and covered with white mucus; pulſe 120; was perfectly rati-

[e] Vide Lond. Med. Journal, vol. 6, p. 362.

rational, anſwering queſtions pertinently; breathing continued laborious; offered drink; ſtarted from it as from an inſtrument of death; ſoon after called for drink, ſwallowing a cup of milk with avidity. "When the ſpaſms were very violent (for they were not always equally ſo) he would cry out, with a tone expreſſive of horror, 'I will not have any thing to drink,' and this even at times when nothing was offered to him." Though rational for the moſt part, yet imagination occaſionally diſturbed, "for he would point towards the bottom of the bed, and ſtart as if ſomething frightened him, although no apparent object could be diſcovered:" would now and then look round, as if with apprehenſion, or with ſuſpicion of his attendants. "A few minutes after he had drank the milk, ſome of it regurgitated in a ſtate of partial coagulation, and mixed with a fluid of a cineritious colour." Though no deficiency in motion of lips, yet ſome in voice; for he would articulate ſeveral words well, then, on return of ſpaſms, "his voice became reduced almoſt to a whiſper." Reſpiration frequent, irregular; cheſt chiefly dilated by the intercoſtal muſcles, for the ribs were elevated and depreſſed in a conſiderable degree, without

out

out a proportional alteration of figure on the abdomen." 3, P. M. Symptoms more violent. 6, P. M. Death.

Treatment. Leeches to the epigaſtric region; fomentations with poppies; a bliſter.

Diſſection. Leave could not be obtained. This is the more to be regretted on account of the accuracy which would have been obſerved by Mr. (now Dr.) Haighton, whoſe anatomical knowledge is well known.

CASE XXIX.

Dr. E. Johnſtone's patient, Charles Bullock, aged 4, bitten by a dog on the right cheek, and juſt under and above the right eye, on the 9th of July, 1784.[f]

The accident happened near Birmingham.

Prophylactic. Wounds were ſmall; bled little; ſoon healed; took Ormſkirk noſtrum next day after bite; applied ſome to wounds. Aug. 1. To-day dull; paſſed night reſtleſs; recovered

[f] Vide Mem. of Med. Soc. Lond. vol. 1, page 255.

covered health next day; continued well till the 15th.[g]

Symptoms. This day low, ſpiritleſs; little appetite; breath very offenſive; pain ſhooting from part bitten to teeth; night reſtleſs. 16th. Dr. Johnſtone firſt viſited; found him in midſt of friends, walking about the room, under great anxiety, horror; look peculiarly fierce; ſtarted on the doctor's entrance; apprehenſive of being ſent to the ſalt water; when aſſured to the contrary was pleaſed and compoſed. Attempting to drink, turned away, changed colour, felt horror; convulſions about the throat, with catching of breath; became tranquil on removal of the liquor; ate ſome bread and butter; felt ſame ſenſation from cold air, as from fluids. On putting hands into a baſon of water, convulſed about throat, and univerſal tremors, with a ſobbing half reſpiration, "and ſuch an inexpreſſible anxiety and gloomy horror of countenance, ſuch a fierce ſcowling look of the eyes, as no language can give an adequate idea of; but if once ſeen can never afterwards be miſtaken." Ordered warm bath; was

g This cannot be attributed to the bite, but to ſome temporary indiſpoſition, or irregularity; perhaps to cold.

was immerſed ſuddenly; univerſal convulſions, with ſenſe of ſuffocation followed; breathing gradually recovered, with a noiſe reſembling cough in the croup; "at the ſame time ejected a conſiderable quantity of viſcid frothy matter." Bath thus proving hurtful was laid aſide; a bolus given of Tart. emet. and op. pur. each half a grain; muſk ſix grains; repeat every hour. Alſo every three hours an injection, aſa-fœtida half an ounce, in ſix ounces of mint water, with two drams of T. op. and two ounces of mucilage of g. arab. Of this mixture add two ounces to four ounces of mutton broth to form the injection. Rub as much as poſſible of mercurial ointment into the wound, face, neck, and other parts of the body. Evening. Much better; on taking a ſpoonful of tea recurrence of all former ſymptoms. 17th. 6, A. M. Laſt night reſtleſs; paroxyſms conſtantly recurring by a recumbent poſture; pulſe weaker, fluttering, irregular: attempting to walk reeled conſiderably; conſtant endeavours to ſpit out troubleſome ſaliva. "It is remarkable, that he was anxious leſt the ſaliva ſhould fall upon thoſe about him, and frequently deſired them to get out of his way, when going to ſpit." Attempted to eat ſome bread

and

and butter, ſpat it out: uſe the injection as before; take half a grain crude op. every half hour; apply bliſter to nape of neck; continue merc. oint. 11, A. M. Convulſions recurred violently about throat, and over body: during this ſnatched at thoſe about him, and uttering a noiſe like a perſon under ſuffocation: duration of fit half an hour; exhauſted; fell into clammy ſweat. 4, P. M. Death.

Treatment may be ſeen with the ſymptoms.

Diſſection----none mentioned.

CASE XXX.

Mr. Dawſan, a grocer in Weſtminſter, bitten by a dog on one of his thumbs, the 25th of Jan. 1784.[h]

The patient had no proof of the dog's madneſs; but he judiciouſly ſought for relief, though, it is to be regretted, from an inſufficient ſource.

Prophy-

[h] Vide Lond. Med. Journal, vol. 5, p. 85.

Prophylactic. Took directly the Ormſkirk powder, and perſevered in it in the uſual manner; wound ſoon healed.

Symptoms. March 8th. (42 days from bite) felt for firſt time tingling pain in cicatrix; arm ſtiff and uneaſy; concluded it to be rheumatiſm. Next day (9th) noon. Difficult deglutition. 11th, in the afternoon. Death.

Theſe are all the particulars narrated; but we have reaſon, from reviewing other caſes, to conclude, that had the detail been afforded the ſimilarity between it and them would have been ſufficiently marked.

Neither treatment nor diſſection is mentioned.

CASE XXXI.

Mr. Babington's patient, Abraham Palmer, a boy 14 years of age, bitten by a dog on the right hand, June 9, 1783.[i]

The patient was brought to the hoſpital about an hour after the accident. Uncertainty of the dog's madneſs.

Pro-

[i] Vide Med. Communicat. vol. 1, page 215.

Prophylactic. No exciſion, no cauſtic; warm milk and water only ordered as a fomentation to hand and arm: merc. oint. to a dram daily rubbed in on the ſame arm: dreſs the wound with common cerate.

Symptoms. July 17, returned to the hoſpital; ſomething remarkable in his countenance, and different from health; great pain in the bitten arm; unable to lift it to his head. His friends applied, not ſuſpecting Hydrophobia, for relief towards this pain: unable to ſwallow ſome mint water; became convulſed at the attempt, ſobbing, and ſuddenly throwing it from him. Pain of arm had already continued two days; no apparent inflammation, no diſcoverable ſwelling of axillary glands: ſome tightneſs of breaſt, as appeared from ſpeech and breathing: thirſt conſiderable; pulſe full, and moderately quick; tongue clean and moiſt: perfectly ſenſible, nor complained of laſſitude, but walked as uſual. Eight o'clock, evening. Spaſms of ſcrobiculus cordis increaſed; pain of arm ceaſed; perfectly ſenſible; "had no diſlike to the open air, but on the contrary had a great deſire to be in it, and ſaid he found himſelf more comfortable when allowed to ſit in the yard, than when confined

to his room:" ſenſibility of touch augmented; felt horror and ſhuddering on wetting his hands; thirſt great; ſalival diſcharge not yet conſiderable. Spaſms about the diaphragm very troubleſome, and appeared to the boy to depend on wind in the ſtomach, which if he could paſs upwards ſaid, would make him well. No ſleep; he could not ſleep, he ſaid, for the buzzing of the flies: ſaid his right eye was drawn in towards his noſe, and that he was blind of it for near a quarter of an hour. 18th, in the morning. Countenance marked with great anxiety; pulſe quick and hard; thirſt great; uncommon eagerneſs in all his actions; face much fluſhed; eyes ſtaring and watery; made frequent efforts to vomit, at which times he was very much agitated, and brought up a viſcid, ropy kind of ſaliva: flies, as he thought, very troubleſome to him. "Why do'nt you kill theſe flies?" he would cry, with a great degree of impatience; and then he would ſtrike at them with his hand, and would often ſhrink in the bed, as if he were afraid of their getting to his face: ſtill rational; requeſted to be carried into the open air in the yard; repeatedly vomited up medicines given him ſoon after taking them;

ag-

aggravation of all the ſymptoms; talked wildly; complained of ſickneſs at ſtomach; convulſions toſſing him from one ſide of the bed to the other. Attempted to ſwallow ſome bread and butter ineffectually; forcibly ejected it, "with a quantity of glairy fluid he had been vomiting all the morning." Convulſions ſtill increaſed----Death. This took place "with a countenance as much oppoſed to that of the minute before, as it is poſſible to conceive, the ſcene being cloſed with ſeveral of the moſt beautiful ſmiles."

Treatment. A bolus of muſk and cinnabar every two hours, 15 grains each, with a grain of opium: kept down two doſes, threw up other two: muſk increaſed to 20 grains; warm pediluvium; bliſter to ſcrob. cordis; a laxative clyſter: by next morning had taken ſeven grains of opium, without ſleep; V. S. to 20 ounces to no advantage: opium ordered to be increaſed till it ſhould produce ſome effect; head to be ſhaved, and bathed with warm vinegar: warm bath.

Diſſection. Nothing on the external body remarkable.

Head

Head----Veſſels of D. and P. mater more turigd with blood than in health. Blood in ſinuſes fluid.

Brain----ſound.

No appearance of diſeaſe in mouth, pharynx, œſophagus.

Trifling inflammatory appearance on epiglottis, and a little way within the trachea; ſome glairy fluid in this part.

Heart----ſound; blood in it ſmall in quantity, but fluid.

Lungs----Blood accumulated here; more in the right than left ſide. Pleura natural.

Diaphragm----Veſſels on ſuperior ſide ſomewhat turgid.

Liver----natural. Gall bladder nearly full of very dark-coloured bile.

Stomach-----free from diſeaſe: contained about half a pint of glairy matter tinged with cinnabar. A diminution of ſize in two or three parts of the ſmall inteſtines.

Bladder----contained ſome urine. Ureters healthy; likewiſe kidneys and abdominal viſcera.

No notice is taken of the diſtance from death when this inſpection was made.

CASE

CASE XXXII.

By M. Poncelin, Surgeon, at Aubreville, near Clermont.[k]

The ravages committed by a mad wolf in his neighbourhood are enumerated by him. The accidents happened about 1782. A ſhepherd at length killed the animal, and fell a ſacrifice himſelf afterwards to Hydrophobia. This poor man had both the frontal and occipital muſcles in a great meaſure deſtroyed: the right eye-brow torn down over the eye; the lower lip carried away; the jaw laid bare; five teeth broken; the right cheek bitten in two; a wound on the ſternum, which laid it bare; another, two inches long, in the fore arm, reaching to the bone; a third ſomewhat ſlighter, in the right leg.

Prophylactic. Mercurial frictions to the wounds for 30 days; wounds healed: was diſmiſſed ſeemingly well.

Symp-

[k] Vide Journal de Bouillon.

Symptoms. Two days after diſmiſſal from hoſpital felt ſenſe of ſuffocation; ſlight headach; convulſions; averſion to food of every kind; averſion to light, and any thing of a white colour: death 44 hours after.

Treatment----None.

Diſſection----None made.

CASE XXXIII.

At Alderſgate General Diſpenſary: a boy 5 years old, bitten by a dog in the cheek, about 1782.[1]

This accident happened from a dog which appears to have been in an early ſtage of the diſeaſe. This was a ſtrange dog which the child found accidentally in the ſtreet, and was *familiarly* playing with it when he was bitten. The animal immediately ran away, and was never afterwards heard of. The child remained well for two months, then became hydrophobic.

Symp-

[1] Vide Lond. Med. Journal, vol. 3, p. 313.

Symptoms. When the phyſician firſt ſaw the child, he found him affected with difficult deglutition; greatly affected likewiſe by the cold air; averſion to every thing liquid. Next day death.

Theſe are all the particulars mentioned of the caſe. Not having acceſs to the diſpenſary books, I cannot here more particularly detail it.

CASE XXXIV.

In Middleſex Hoſpital, a middle aged man, bitten by a dog in the cheek, on Dec. 15, 1781.[m]

This was a ſevere accident in reſpect to the extent of the wound. It reached from the lower eye-lid to the left corner of the mouth.

Prophylactic. In this inſtance likewiſe no ſuſpicion of madneſs in the animal was entertained. Nothing therefore was done to the wound as preventive. Common dreſſings were thought ſufficient applications to promote

[m] Vide Lond. Med. Journal, vol. 3, p. 92.

mote cicatriſation. In three weeks the wound was perfectly healed, and he was diſcharged the hoſpital. Next day (Jan. 9) he returned, labouring under the diſeaſe, being 25 days from the accident.

Symptoms. This morning ſwallowing a little tea firſt diſcovered difficulty in the attempt; was ſtruck with apprehenſion; ſeemed conſcious of madneſs, cautioning his wife to beware leſt he ſhould injure her. Re-inflammation on the wounded part; pain and uneaſineſs in it;° great agitation; tongue white; pulſe full, and conſiderably quickened; ſight of water in this inſtance produced not the leaſt uneaſineſs throughout the diſeaſe, an occurrence, though rare, which has taken place in a few other caſes. Deglutition extremely difficult: on attempting "to drink, he was immediately ſeized with ſpaſms of the throat, and with violent efforts to vomit." During the whole of this day (Jan. 9) was rational, giving pertinent anſwers to queſtions aſked him: watchfulneſs throughout the night; pulſe be-

° This fact is proved by the patient's frequently putting his hand to the cheek, not only when he came into the hoſpital, but during the courſe of the diſeaſe, when free from convulſions.

becoming ſmaller and quicker; ſalival diſcharge increaſed; ropy and troubleſome. 10th. Difficulty of deglutition ſomewhat leſs; ſwallowed ſome liquid from ſpout of tea-pot: this ſhort interval ſucceeded by ſevere exacerbations; became violent; was tied down to bed. 3, P. M. Death.

Treatment. Mercurial ointment rubbed into the wounded cheek; muſk, cinnabar, &c. ordered.

Diſſection. Tongue and fauces white, not dry: muſcles of the tongue ſound; ſubmaxillary glands ſomewhat enlarged.[p]

Œſophagus----ſlightly inflamed; contiguous lymphatic glands larger than common.

Stomach----Large quantity of yellowiſh bile in it, and in duodenum.

Other abdominal viſcera natural.

Lungs----adhering to different parts of pleura, and ſomewhat fuller of blood than uſual.

Heart----Ventricles and contiguous veſſels quite empty: *liquor pericardii* very ſmall in quantity.

Brain

[p] This is a very uncommon occurrence. Diſeaſe has not been diſcovered here.

Brain---Dura mater ſeemed contracted, adhering to pia mater, near the longitudinal ſinus. A ſmall quantity of watery fluid collected between D. and P. mater at poſterior part of brain.

Sinuſes---ſomewhat more turgid than uſual. The quantity of water in ventricles not more than uſual.

CASE XXXV.

Dr. Berkenhout's patient, a young man, bitten by one of his father's hounds on the arm, ſix weeks before the diſeaſe commenced.[n]

We are not told where, or when this accident took place. The caſe is publiſhed in 1783. Dr. B. not called till the diſeaſe was far advanced. A day or two before this, pain in bitten arm, extending towards the ſhoulder. At 10, A. M. on Dr. B.'s firſt viſit, difficult deglutition: retained his ſenſes throughout

[n] Vide Berkenhout on Bite of Mad Dog.

out the day; no propenſity to bite; reſtleſsneſs hourly increaſed. 11, P. M. Death.

Prophylactic----None mentioned.

Treatment. Juice of rib-wort had been adminiſtered (the ſpecific of the place) from the time of the attack till the arrival of Dr. B. Ordered now warm bath, continued in it an hour: merc. oint. was rubbed into each arm: take op. crude one grain every hour.

Diſſection----None made.

CASE XXXVI.

Mr. Bathie's patient, James Patton, aged 14, bitten in the right hand by a dog, on the 18th of Nov. 1774.[o]

This happened in Fifeſhire. The dog ſhowed to the lad on his going up to him, the uſual marks of tameneſs and affection peculiar to this animal. He fawned on him; he ate bread which the boy gave him. Two men being preſent, the one deſired the lad to tie a cord

[o] Vide Med. Comment. D. i. vol. 3, p. 290.

cord round his neck to ſecure him (he was a ſtrange dog); the other cried out to him to deſiſt, being ſuſpicious from ſomething particular obſervable in the eye. It appeared dull; it was alſo inflamed. The boy, inattentive to the caution, in the act of tying the cord was bitten. Wound bled freely. The animal at this moment ſeems to have ſuffered a paroxyſm; for he flew at the lad's dog, and bit him; then he betook himſelf to flight. About five days after he was killed in a different part of the country, as a mad dog, where no knowledge of this accident had reached.[P]

Boy's hand and arm ſwelled greatly; became inflamed up to the ſhoulder, proceeding doubtleſs from the tendon being wounded, though the bite was ſmall, and cloſe by the root of the ring finger. Boy brought to Mr. Bathie on third day after, on account of ſwelling of arm; no ſuſpicion of dog. Wound then ſcabbed over; circumſtances related excited Mr. B.'s ſuſpicion; but nothing done to the wound, through an idea of its being too late,

[P] The reader is requeſted to attend to the circumſtance of early capability in the dog to communicate infection, and to his fawning and taking food.

late, and of the poiſon having already entered the habit.

Prophylactic. Purged with calomel every third day for four times; wound fomented with emollient decoction; keep up diſcharge by baſilicon and precipitate; remained well for about eleven weeks.

Symptoms. Feb. 9, 1775, was indiſpoſed; dull and heavy for ſome days before; attributed to vexation from his companions improperly teazing him with ſtories of mad dogs, and dreadful deaths. This day "univerſal laſſitude, ſickneſs, loathing of food, and a ſlight head-ach." Kept at work to-day, theſe not being ſevere: concealed his illneſs. 10th. Still concealed it, and went to plough; could not continue at work: his maſter, ignorant of his illneſs, chid him as lazy: "he ſat down and complained of a pain between the ſhoulder and elbow of his right arm, a diſorder of his throat, and a head-ach." Went home; attempted to drink, but could not: thirſt conſiderable; walked this evening a mile, with great difficulty and fatigue: ſeized ſoon after with ſhivering; complained of pain of throat; pain in arm continued; examined; found the ſkin of a yellowiſh hue from elbow to ſhoulder

der-top, "having both the appearance and feel of that of a dead perſon:" reſtleſs this night. 11th. Symptoms worſe; deglutition rendered impoſſible; attempts threatening inſtant ſuffocation; attempts to eat equally dreaded. Evening. Pain of arm continues; pain at pit of ſtomach; great uneaſineſs at throat: attacked now with cold and ſhivering, ſucceeded by hot fit, and ſweat: pain of arm no longer troubleſome; ſlept after paroxyſm two hours; about midnight delirium; ſtruck at his mother, thinking her a ſtranger intending him miſchief; but when reaſoned with on the impropriety, he became ſenſible, and ſorry for it. From this time appeared unconcerned; ſpoke only when ſpoken to; looked timid, alarmed at noiſe, and luminous objects, ſubſultus tendinum; delirium, yet ſenſible and collected when ſpoken to; when undiſturbed would fall into reverie; reaſon returned when attention was arreſted, in the midſt of his higheſt phrenzy: ſhrunk back from ſight of fire, or lighted candle; felt oppreſſed by preſſure of bed-clothes. 12th. Mr. B. firſt ſaw him; he was then "lying on his back, rolling his eyes without intermiſſion; and he did not ſtir out of that poſition until I (Mr. B.) ſpoke

to

to him." Being ſpoke to, he anſwered haſtily; roſe on his knees; paſſed ſome urine in a pot, of a greeniſh colour, turning whitiſh when cold: ſince febrile paroxyſm; a deſire to paſs urine frequently; always of ſame colour, and ſmall in quantity: tongue now covered with thin white fur; great deſire to drink; ſkin moiſt, with conſiderable heat; pulſe full, and from 125 to 130; pain of head; oppreſſion from heat of ſtomach, and inability to drink. "He had alſo an inclination to vomit, but was afraid to do ſo for the obſtruction in his throat." Tone of voice unaltered from health; ſpoke to Mr. B. at this time rationally; cicatrix of a bluiſh hue, but no ulceration. Mr. B. propoſed V. S. he ſtarted up, held out his arm, adding that he would do whatever bidden for recovery: attempted to drink; let fall the cup; ſtarted on his feet; graſped his throat, remaining about a minute in a ſtate of ſuffocation, till the ſpaſm it occaſioned gradually relaxed; then laid down: convulſions of face, throat, breaſt, with deep ſobbing and noiſe; ſymptoms aggravated; became furious, fancying his friends conſpiring againſt his life; was rational at intervals to the laſt; the paroxyſm ſtrong, in which three or four men

could

could ſcarcely hold him; at length ſtrength exhauſted----death. It is obſerved that the lad, ſnatching at a bit of bread held out to him by his uncle, bit his thumb. Mr. B. adds, that the man had reſolution and prudence to cut out the piece, and ſo remains free. The caſe likewiſe clearly points out to us the fear and apprehenſion entertained by thoſe about him, for their own ſafety. A needleſs apprehenſion.

Treatment. Blood let to a pound laſt day of diſeaſe; was thick, long of ſeparating; ſerum ſomewhat viſcid and greeniſh; gave a grain of tartariſed antimony: an hour after "he vomited a great quantity of green viſcid matter." Ordered an emollient clyſter every hour; not given from fear in the attendants; a bliſter applied to the throat.

Diſſection----None made.

CASE XXXVII.

Dr. Fothergill's patient, Mr. Bellamy, aged 40, bitten by a cat in the leg, Feb. 1774.[q]

This

[q] Vide Lond. Med. Obſ. vol. 5, page 195.

This happened in Holborn, London.

Prophylactic. 15th. Took the Ormſkirk medicine, according to printed directions. About April 15, was ſeized with a rheumatiſm in knee: pumped cold water on it. June 7. Still affected with the ſame: took ſome alterative pills for it; continued them a week; then felt titillation of the urethra; contraction of ſcrotum; emiſſio ſeminis involuntaria: attributed this to medicine.

Symptoms. June 15th. A reſtleſs night. 16th. Impeded deglutition: head-ach, ſweat, and watchfulneſs laſt night: no marks of inflammation on cicatrix; thirſt; aſpect various; eye penetrating; pulſe 90, frequently changing from hard to ſoft, and vice verſa: tongue dry; urine ſcanty; ſcrotum continues much contracted; emiſſio ſeminis leſs frequent. At this time had no recollection of his accident, nor had it occurred to him; hence the ſymptoms not attributable to fear. Attempting this evening to ſwallow, muſcles of deglutition convulſed: countenance pale; great agitation; thirſt increaſed; tongue white, yet moiſt: conſtant hawking up of tough phlegm; heat of body moderate; pulſe quick, hard, and irregular; ſtrong palpitations of heart;

heart; rational as in health. 17th. Morning. Symptoms all increaſed laſt night; no reſt whatever; ſaliva more copious, but more fluid; tongue white and moiſt, but foul; pulſe much as before; hands tending to coldneſs; contractio ſcroti, &c. gone; ſenſibility of touch morbidly increaſed; delirium at night, but offered no violence. Death at half paſt twelve this night.

Treatment. Firſt day of diſeaſe, V. S. to ſix ounces; a bolus of muſk 10 grains, cinnabar 20 grains, every four hours: food, whatever he inclined to. Five in the evening. Blood drawn in the morning ſhows ſlight marks of inflammation; craſſamentum firm; ſerum remarkably yellow. Clyſter of pulv. doveri; warm bath; mercurial unction on legs and thighs. Second morning. Relieved by the bath; bled copiouſly ſtanding; warm bath repeated; extr. op. two grains every hour. Five o'clock, evening. Relieved again by the bath; a temporary relief, for he died this night.

CASE

CASE XXXVIII.

Dr. Vaughan's firſt patient, Thomas Nourſe, aged 14, bitten by a dog on the left cheek, October 16, 1773.[r]

This happened near Leiceſter: wound large and lacerated.

Prophylactic. Day after accident went to the ſea; dipped with the uſual ſeverity recommended for ſuch accidents; took the Ormſkirk noſtrum; likewiſe applied to wound common adheſive plaiſter. In a month ſore nearly cicatriſed.

Symptoms. On Nov. 14, felt ſlight ſymptoms; tightneſs over temples; pain in head; appetite and deglutition impaired; ſleep unrefreſhing. 15th. Pain of head, and tightneſs of temples increaſed; night reſtleſs; ſenſation of boiling heat in the ſtomach, proceeding towards fauces. 16th. Deglutition more impeded; ſaid the air ſuffocated him;[s] held his handkerchief

[r] Vide Vaughan's Caſes and Obſervat. on Hydroph.

[s] The antients have noted the ſame. Inſueta aeris querela, ſays Cœlius Aurelianus. Vid. lib. iii. cap. 11.

kerchief to his mouth to prevent its entrance; horror at the ſight of fluids; ſuffered greatly in paſſing little puddles of water, in his way to the infirmary: perfectly rational; pulſe ſoft and unequal; reſpiration remaining free; heat moderate; no thirſt; eyes fierce, with a mixed timidity, and with ſomething peculiar, not eaſily definable, impreſſing the doctor with uneaſineſs at viewing them; their colour changed; pupil dilated, and iris of an orange hue. When he ſpoke, it was in a tone of plaintiveneſs; no propenſity to bite; water offered produced hideous moaning; riſus ſardonicus with convulſions; and he ſtruck forcibly the pit of the ſtomach; lying on his back produced the ſame ſenſations with cold air, cauſing him ſuddenly to ſtart up, and bend forward for eaſe; deglutition performed with difficulty, unleſs the ſubſtance was thruſt far into the throat; this removed the impediment; ſenſibility to touch morbidly acute; an embrocation to the external fauces produced convulſions; paſſed urine of a lemon colour eaſily; could view it without horror in a black earthen pot; in a glaſs the ſight produced inſtant convulſions; difficulty of deglutition; 2, P. M. this greatly augmented; boiling heat of

ſto-

ſtomach mitigated; urine forcibly expelled in the paroxyſm; erectio penis conſtant. 5 P.M. ſymptoms worſe; muttered incoherently; but, on being reproved, and his attention arreſted, was collected and rational; craved much for beer, but attempts to ſwallow induced convulſions; covering the liquor, and ſucking through a quill, tried unſucceſsfully.[t] 9, P.M. Every thing worſe; highly reſtleſs; talkative, attempted to get out of bed; eyes fiercer; inceſſantly craving drink, but not unruly; inceſſant plucking now at the bedcloaths. 11, P.M. Worſe; perturbation and rambling inceſſant, yet rational when ſpoken to; frequent regurgitations from ſtomach, though not actual vomiting: ſalival diſcharge more viſcid, and very troubleſome; all his complaints aggravated by the improper conduct of his attendants, who, believing in the vulgar opinion of the infectious nature of the diſeaſe in man, and in other animals, were attempting to ſuffocate him in the bed clothes, from which his more intelligent and humane phyſician relieved him, with the ſeverity of juſt rebukes to the perpetrators: though ſenſible

t Cœlius Aurelianus recommends ſimilar ſtratagems. Vide lib. iii. cap. 16.

ſible of the ill treatment received, yet mild and obedient to Dr. V.'s perſuaſions; nor was diſpoſed to violence, notwithſtanding ſuſpicion of his attendants, whoſe fears for ſelf preſervation had overcome their humanity. 17th. 2, A. M. Complained of an offenſive ſmell in cicatrix, yet no change had taken place in it; others could feel no fœtor from the part: eyes now had loſt their fierceneſs; were more fixed; hands and feet cold; pulſe irregular; violent convulſions, with copious diſcharge of ſaliva; ſpaſmus cynicus: "odd convulſive motion in the muſcles of the face, and the ſtrange contrariety which took place in the action of theſe produced the moſt horrid aſſemblage of features that can well be conceived." Ceaſed now to call for drink; perpetually calling for food. Death.

Treatment. Nov. 16. On being brought to the hoſpital was bled; blood firm in texture, with a due proportion of ſerum; and appeared healthy: bolus of a ſcruple of muſk and extr. op. two grains. Dr. V. was unwilling, in this diſtreſſing complaint, to truſt to muſk and opium; he therefore directed a bolus of muſk fifteen grains, turpith mineral one grain, extr. op. five grains, every three hours; alſo

alſo an ounce of mercurial ointment to be rubbed on the cervical vertebræ; next an embrocation of T. op. two ounces, acet. ſaturnin. half an ounce. Unable to bear this application, it was changed for extr. op. half an ounce, camphor diſſolved in ſpirits of wine three drams, confect. damocr. ſix drams, made into a plaiſter for the throat, which the patient bore well. 9, P. M. A clyſter of mutton broth, with T. op. half an ounce. Two hours after, opium to a larger quantity was given ineffectually, with a view to ſtop exceſſive reſtleſsneſs.

Diſſection. Abdominal muſcles natural in appearance and colour, notwithſtanding the many blows which the patient had given himſelf during his paroxyſms. Abdominal viſcera alſo natural.

Stomach----Marks of inflammation, with a ſmall quantity of fluid mixed with the medicines.

Liver free from diſeaſe; in gall bladder ſome air; ſmall and great inteſtines empty; no fœces in rectum.

Thoracic viſera ſound.

Diaphragm----healthy.

Œſophagus opened longitudinally; no veſtige of inflammation in it.

Velum

Velum pendulum palati, pharynx, larynx, glottis, without morbid marks.

Brain not examined.

CASE XXXIX.

Dr. Vaughan's ſecond patient, a farmer, aged 25, bitten by a dog in the fore finger of left hand, in Sep. 1775.[u]

Two years after the laſt patient's death another, under the ſame diſeaſe, is brought to the Leiceſter Infirmary.

Prophylactic. The ſuperſtitious notion which long prevailed of the diſeaſe being influenced by the full and change of the moon, induced this young man, a week after the bite, the moon then being at the full, to repair to the ſea. Bathed the common time recommended; drinking alſo on the ſpot ſufficient to purge him briſkly. Wound cicatriſed while at the ſea; no trouble from it afterwards.

Symptoms. June 6 following. Firſt felt a pain in bitten hand and arm; thought it rheumatiſm;

[u] Vide Caſes and Obſervat. on Hydroph.

matiſm; bathed for it this evening in the river: no inconvenience from the water. 7th. Laſt night reſtleſs; this morning ſickneſs, but not vomiting; yet went to work: ſwallowed tea with eaſe at breakfaſt; thirſt through the day troubleſome; quenched it without inconvenience. This "evening he was ſeized with a vomiting, which continued the whole night, and until eleven o'clock next day (8th), every thing coming up as ſoon as taken." Liquids, at this time, could not be longer borne; ſenſation of heat aſcending from pit of ſtomach to fauces; ſalival diſcharge viſcid, copious, troubleſome, conſtantly ſpitting it out in large white flakes with force: frequent ſtarting from his chair, for he could not lie down: ſenſe of ſuffocation, with great pain at ſcrob. cordis; deſirous of cold air, but it conſtantly renewed his diſtreſs; ſight of water excited convulſions; riſus ſardonicus: eyes expreſſed fierceneſs, with fear and timidity peculiar to Hydrophobia: pupil greatly dilated, yet colour of iris not changed: ſkin cool; pulſe feeble; frequent eructations; urine paſſed with eaſe; reſpiration free in abſence of cold air, or of paroxyſm: no pain, except at pit of ſtomach: was ſenſible of his ſituation, and of aggravation

tion of his complaints; objected not to warm bath; no change in cicatrix whatever during diſeaſe; ſymptoms rapidly aggravated. Ten this evening, death.

Treatment. Warm bath; purgative injection; repetition, without the patient's objecting to oil and T. op. merc. oint. ordered to be rubbed on fore part of throat to four drams; cover the part with empl. è cymino, with extr. op. half an ounce. Let friction be uſed to pit of ſtomach, with embrocation of half an ounce of ſpt. ſal. ammon. ten drams olive oil, ſix drams oil of amber, and ten drams T. op. alſo merc. oint. two ounces upon ſhoulders and back. To raiſe quick ſalivation, let fumes of cinnabar be taken into the mouth; alſo take every four hours a bolus of 15 grains of muſk, three grains of merc. emet. flav. four grains of extr. op.

Diſſection----None made.

CASE

CASE XL.

Dr. Vaughan's third patient, a boy 8 years of age, bitten by a cat on the wriſt, about the 29th of July, 1778.[r]

This boy fell ill about a month after the accident. Aug. 29, Dr. V. called to viſit him.

Symptoms. Day before complained of pain in cicatrix, ſtretching up the arm, and to temple of ſame ſide: ſoon after deglutition impeded: this day worſe, but Dr. V. did not find eyes fierce, as in his other patients, but the boy looked timid and dejected: ſobbed deeply at the ſight of water, turning away with perturbation: convulſions if any thing touched his external fauces; ſighed deeply, yet reſpiration free, except in paroxyſm: pulſe feeble, irregular, intermitting: no thirſt; no preternatural heat; intellects clear; anſwered rationally, "and whatever he wanted to obtain, whether to have ſome diſagreeable object removed, or ſome requeſt granted, it was implored in the moſt piteous manner." Went into

[r] Vide Caſes and Obſervat. on Hydroph.

into the warm bath, but felt uneaſy at touch of water, and more ſo when it touched any freſh ſurface of his body. 10, P. M. Sighed more; ſtarted up in bed. 12, P. M. Reſtleſs; face fluſhed; frequent ſtartings; complained of weight of bed clothes; unable to lie under them. 30th. 1, A. M. Talked frequently. 3, A. M. Reſtleſsneſs increaſed; eyes fierce; ſighed deeply; talked much; aggravation of every ſymptom; complained of cold, but could not bear the bed clothes: intellectual faculties ſeemed quickened by diſeaſe; diſtreſs about pit of ſtomach, like the two former patients, but deſcended down the recti muſcles. 11, A. M. Every thing worſe notwithſtanding the remedies uſed. 4, P. M. More ungovernable, but no inclination to bite: talked incoherently, and had, for the three laſt hours, walked about inceſſantly: pulſe not to be numbered, through quickneſs. 9, P. M. Pulſe extremely feeble; complained of heat, though to the touch cold and clammy. 31ſt. 1, A. M. Eyes enlarged, with a livid circle round: upper lip covered with frothy mucus: would lie ſtill for a few minutes, then ſuddenly plunge with his feet: breathing irregular, laborious: ſpeech faultering. 2, A. M. Death.

Treat-

Treatment. Warm bath; temporary relief; remained in it near 45 minutes: on quitting bath a plaiſter to the throat, of which facc. ſaturn. was the baſis. Dr. V. changing the plan adopted in his former caſes, uſed the metalline antiſpaſmodics: flowers of zinc one grain, cuprum ammoniacale half a grain, muſk ten grains; make into two pills, with a little ſyrup: take them every three or four hours. Rub on ſhoulders and back a liniment of ſtrong mercurial ointment, and oil of amber, each three drams: inject a clyſter of five ounces of freſh broth, with T. op. thirty drops. Alſo prepare a medicated atmoſphere, by burning gum ammoniac in the room. 12, P. M. Repeat the warm bath; inject a clyſter, with a dram of T. op. continue merc. liniment: remained in bath near two hours, with ſome alleviation of diſtreſs: pills increaſed in doſe, containing now two grains of cupr. ammon. two of extr. op. three grains of flor. zinc. with ten grains of aſafœtida: alſo inject a dram of aſafœtida, diſſolved with a dram of T. op. "The above pills, though repeated every four hours, afforded not the ſmalleſt relief; nor did they ſhow the *leaſt action* upon the frame." 8, A. M. Warm bath of milk and water; could

could remain in it only 15 minutes: a purgative injection. Dr. V. determined now to try the effect of ſudden immerſion, imitating the caſe which Van Helmont had affirmed to have been ſucceſsful, viz. the old man dipped at Sluys. "A large tub of cold water, well ſaturated with common ſalt, was made ready, into which this patient was ſuddenly plunged over head and ears, and there held until he ceaſed to ſtruggle: he was then taken out, and the ſame operation again repeated, until he became ſo quiet, that I was apprehenſive a total extinction of life would actually take place. He was then wrapt in a blanket, and put to bed:" remained quiet two hours, but neither horror of fluids, nor impeded deglutition abated. 8, P. M. Swallowed ſome pills of camphor, nitre, and opium.

Diſſection. Nothing obſervable externally: ſtomach and inteſtines healthy: in the latter ſome air; ſome fluid in the former, chiefly of medicine.

Liver----healthy; gall bladder full of bile; diaphragm healthy; lungs healthy.

Heart, and large veſſels not preternaturally diſtended with blood.

Œſo-

Œſophagus----No marks of diſeaſe; it was divided longitudinally. Back part of the fauces without morbid appearance.

Brain----Nothing unuſual.

About 48 hours terminated this complaint.

CASE XLI.

Dr. Dickſon's firſt patient, John Brown, aged 13, bitten on the right cheek and ſhoulder by a dog, in the beginning of Jan. 1767.*

A conſiderable number of perſons were bitten at the ſame time in Whitechapel road, of whom this and the two following caſes proved fatal.

Prophylactic. Lad taken in to London Hoſpital immediately after bite; wounds well ſcarified, and ſuffered to bleed freely; mercurial ointment rubbed on the parts for ten days; no ptyaliſm; left the hoſpital after three weeks; had taken three purges of ſalts. Continued well till April 30.

Symp-

* Vide Lond. Med. Obſ. & Enq. vol. 3, p. 356.

Symptoms. This day, while at play with other lads, felt pain in right cheek: this night cramp, and pain of cheek worſe: no ſleep. May 1. Breakfaſt as uſual. Evening. Could neither eat nor drink; breathing difficult; no ſleep this night; no food; no drink from this till the 4th, at 1. P. M. when Dr. D. firſt ſaw him: had now a wild frighted ſtare; clapped his hand frequently to cicatrix on cheek; ſame to throat; hung his chin on his breaſt; ſpat much and frequently a frothy ſaliva; complained of the cold air on cheek and throat, producing pain: conſiderable mucus from noſtrils; breathing quick, laborious; pulſe ſoft, not frequent; heat natural; ſenſation of ball in throat without pain; rational, without apprehenſions of danger, till three days before, when he heard of a neighbour's death from this diſeaſe, whom he knew to have been bitten at the ſame time with himſelf: a pain then inſtantly ſtruck the cheek bitten. Here it is apparent that fear was the exciting cauſe. Attempted to drink water ineffectually; coaxed to come to the warm bath; proceeded to the door, but on feeling the cold air, reſolution forſook him: hurried down two pair of ſtairs with great ſpeed, reſolving to bathe, but was

obliged

obliged to be carried to the bath: a temporary relief from it; ſpaſms of throat ceaſing: in the bath afraid of ſuffocation; eructations while in the warm water, with ſome relief; remained in bath 25 minutes; was put to bed in blankets: ſweated copiouſly for half an hour; eaſy under it; recurrence now of ſpaſms of throat; great reſtleſsneſs; complained of hunger; ate an apple greedily, with a bit of bread and beef cut ſmall: "in leſs than half an hour afterwards he was ſeized with a conſiderable vomiting, and what he threw up was of a very frothy nature, and colourleſs:" ſome hours after, vomiting recurred; aggravation of ſymptoms; continued ſenſible till a little before fatal termination; for a quarter of an hour delirium; kept conſtantly calling out to remove the dog; death. This took place at eleven the ſame evening; reſtleſsneſs during the laſt hours inconceivably great: "it was not in the power of thoſe who attended him to keep the bed clothes upon him, though he was continually complaining of the cold air giving him the greateſt pain in his cheek and throat, which made it at laſt neceſſary to have him ſtrapped down. He often cried out, that the doors of the ward were open when they were

were ſhut; and, on account of cold, wanted the curtains to be drawn cloſe; nor did it appear that light any-wiſe affected him." Thirſt intenſe throughout, but unable to drink, though frequently making the attempt: "his ſpitting of frothy matter increaſed ſo much, that in ſpite of all the care poſſible, his bed was exceedingly wetted by it; and the mucous diſcharge from his noſtrils likewiſe conſiderable." No attempts to bite; pulſe weak, not to be felt for ſome hours before death: ſpaſms greatly affecting muſcles of breaſt, as well as throat. "In a few hours after his death a conſiderable degree of blackneſs was obſerved about his private parts, his throat, and the ſhoulder where he was bitten (which had no ulceration upon it) and likewiſe about the eyes, which were quite ſunk in the orbits, and evidently, to me, diminiſhed in their ſize, attended with an opacity of the *cornea*, and muddineſs of the humours, which I never before had ſeen in the eyes of any dead perſon."

Treatment. *Warm bath: people of the ward ſo timid, leaſt they ſhould receive infection, that they could with difficulty be prevailed on to*

to come near the patient, or lend their aſſiſtance.[w] Ordered ſome miſtur. ſpermaceti cum T. op. Add to the mixture T. op. 20 drops; give every hour: or inſtead, a grain of extr. op. clyſter of broth to be injected with T. op. a dram; repeat it every two hours: foment neck and throat, and if poſſible apply an emollient poultice: take pill of extr. op. two grains, and repeat it. On recurrence of vomiting, clyſter, with T. op. a dram and a half.

Diſſection----None made.

CASE XLII.

Dr. Dickſon's ſecond example of diſeaſe: a gardener's ſervant bitten on the arm at the ſame time with John Brown.[x]

This patient the Doctor did not ſee, but obtained his information from the gardener whom the patient ſerved.

Prophylactic. Wound ſoon healed; and he applied to a perſon at Walthamſtow who

[w] Vide p. 142 for a refutation of this ill-grounded notion.

[x] Vide loc. ſupra citat.

poſſeſſed an *infallible* remedy, to which he truſted. " He continued in good health, and without any apprehenſions of danger, till Tueſday night, April 28, when, at a public houſe, after having drank a ſhare of ſeveral pots of beer, he found, all at once, an impoſſibility of ſwallowing. He had filled his mouth with beer, but not being able to get down a ſingle drop, he ſpurted it out with great force, and cried out that he was a dead man. From this time he could never be prevailed upon to take any thing into his mouth. He kept continually ſpitting a frothy matter, of which he deſired thoſe about him to *beware*: was exceedingly reſtleſs; had no ſleep; but remained perfectly ſenſible to his death, on Friday noon, May 1."

CASE XLIII.

Dr. Dickſon's third example of diſeaſe: -------- Bean, aged 69, bitten on the ſhoulder by the ſame dog, on the ſame day.[y]

The particulars of this caſe were furniſhed by the apothecary of the hoſpital, who carefully collected them.

This

[y] Vide loc. nuper citat.

This man came to the hoſpital after the accident, and remained in it three weeks; was well at leaving the houſe; but five days after, " he was ſeized with a pain in the ſhoulder where the dog had bitten him, which extended to his throat. His breathing became very ſhort. Next morning he drank ſome tea with difficulty; was delirious from this to the Thurſday ſe'nnight following, when he died. He ſpat much frothy matter the whole time, and neither ate nor drank any thing ſince the tea already mentioned, the day after he was ſeized, till ten minutes before his death, when he drank a cup full of cold tea. He had no ſleep during all his illneſs, and was blind the laſt four days. The night he was bitten there was a great diſcharge of blood from the wounded parts."

CASE XLIV.

Dr. Raymond's patient, -------- Boyer, aged 25, bitten by a mad dog in the leg, on the 19th July 1765.[z]

This

[z] Vide Lond. Med. Obſ. & Enq. vol. 5, App.

This happened near Marſeilles: wound pretty large; bled freely; not lacerated: leg for ſome time previouſly odematous and ſwelled: in other leg two ulcers; patient cahectic.

Prophylactic. Part cauterized ſome hours after: mercurial ointment rubbed in round it; and plaiſter of ſame applied over wound; continued ſo dreſſed till cicatriſation. 2d day. Bolus of 4 grains turp. mineral; 8 grains camphor; vomited and purged briſkly; ſalivation now came on. 3d day. Rub bitten leg with merc. oint. In the ſpace of a month five frictions to both legs; each of three drams of merc. oint. During this month ſame bolus five times; ſalivation ſlightly to 40th day. On third day after bite took Cobb's powder; it vomited him briſkly; repeated ſeven or eight times during the month with ſame effect. During firſt week, gave alſo, four times, a dram of freſh-gathered and powdered anagallis flore puniceo. 41ſt. day. Turp. bol. for ſeventh time: ſucceeding three days bathed in ſea.

Symptoms. 74th day. Slight difficulty of ſwallowing. Evening. Could not ſwallow water; ſlight uneaſy ſenſations for ſome days paſt; tightneſs in œſophagus; difficult reſpiration. Proceeding this day to Marſeilles, and paſſing a ri-

a river, was ſeized with horror at ſight of water. 8, P. M. Dr. Raymond viſited him; found his countenance wild; eyes fierce, but mind compoſed: talked inceſſantly, with great rapidity: ſpoke kindly, but with great volubility, to his brother, repeating theſe tenderneſſes: complained of burning heat; was very reſtleſs, ſhifting in bed from place to place with extraordinary quickneſs: was offered liquor to drink; took the glaſs, ſighed deep, and let it fall: raiſed himſelf ſometimes in bed, ſending forth furious and horrible ſhrieks, yet admoniſhed the attendants not to be afraid of him: thanked God he had no inclination for biting; every action rapidly performed, and with uncommon vivacity. "Vomited now and then, with violent efforts, a glairy matter, little in quantity, and which made him ſhudder." Salival diſcharge. 76th day. Death. Mouth at this time covered with ſaliva, and countenance bloated: pulſe quiet during diſeaſe. Dr. R. thinks the cautery not properly executed, otherwiſe the event would have been more happy. It was not done in his preſence.

Treat-

Treatment. On 74th day twice bled in arm and twice in foot: pill of opium ordered.

Diſſection---None made.

CASE XLV.

Dr. Munckley's patient, a man 36 years of age, bitten by a little favourite dog on the hand, alſo on the cheek, on the 11th of July, 1760.[a]

The place where this happened is not mentioned, and delicacy likewiſe has concealed the patient's name.

Prophylactic. On the accident taking place the patient, immediately ſent for his phyſician. V.S. to ten ounces ordered; bathing in the ſea recommended, which was complied with; continued it ten days; took no medicine, truſting to its virtues. Continued well about a month, though with the appearance of melancholy and thoughtfulneſs in his look.

Symp-

[a] Vide Med. Tranſ. vol. 2, p. 46.

Symptoms. Aug. 19. Some difficulty of deglutition; much diſturbed this day and through the night. 20th. Dr. M. conſulted; little heat on the ſkin; pulſe low, not much quicker than in health: veſſels of the eyes turgid; tongue parched and dry, not white: Hydrophobia now fully formed. 21ſt. 10, A. M. Slept quietly laſt night; towards morning toſſed much; this increaſed rapidly; his friends could no longer ſtay with him. "On entering the chamber we found him ſitting up in bed, with an attendant on each ſide, inceſſantly toſſing his arms about; turning towards the phyſicians; baring one of his arms, and ſtriking it with the other, he called out vehemently to be let blood." Redneſs of eyes increaſed; horror and deſpair of countenance; ſpitting increaſed; this done with rapidity, and with force; now in the bed, now in the room, now in handkerchiefs for the purpoſe: phlegm yellowiſh, tough; hawked up with great difficulty: this done with a noiſe, and conſiderable alteration in the tone of voice. Is this what has been called barking? On opening his mouth it was ſeen adhering to the fauces: no foam about the mouth; perfectly rational; knew every body around; offered no violence, nor had

had the attendants any apprehenſions from him: thyroid cartilage more than commonly protuberant, eſpecially the upper part, gently ſtroking of which, by one of his attendants, gave momentary relief; attendant, during the night, with the corner of an handkerchief, put his finger into his mouth, *and roped out from time to time the tough mucus*. On water being poured from one baſon to another before him, it excited the greateſt diſtreſs and horror. To the perſon thus employed he gave the epithet of *villain*. It excited convulſions, and cauſed him to daſh himſelf againſt the head of the bed, as if endeavouring to eſcape from the ſight. Death, between one and two of the ſame afternoon.

Treatment----None attempted.

CASE XLVI.

Dr. Rutherford's patient, George Pollock, 45 years of age, bitten by a dog on the left leg, in the end of Nov. 1749.[b]

This

[b] Vid. Mem. Lond. Med. Soc. vol. 1. p. 243, communicated by Dr. James Johnſtone, Worceſter.

This accident happened in Edinburgh; thirty hours after which the patient put himſelf under the care of Dr. Dundas of that city, who enjoined the following.

Prophylactic. Wounds waſhed with common ſpirits; next day V. S. in right arm to 16 ounces; take twice a day, for two days, of native and factitious cinnabar, each twenty-four grains; muſk fifteen grains. Then take for four mornings a dram and half of pulv. antilyſſi: uſe the cold bath forty days ſucceſſively; dreſs ſores with merc. oint. patient bathed part of this time only, and in part uſed yellow baſilicon to the ſores in place of merc. oint. ſores kept open a month, or upwards: ſores not painful; never diſcharged pus, but only ſanies; remained well till March 3, 1750.

Symptoms. This day affected with pain in loins, os ſacrum, thighs, and falſe ribs, with heat, and ſharp pain of urine. 4th. Morning. Pain in abdomen; impeded deglutition. 5th. Admitted into the Royal Infirmary; put under the care of Dr. Rutherford, clinical profeſſor: patient now diſtreſſed from impediment to deglutition; attempt producing deep ſighing, with horror of countenance, and ſpaſms threatening

ening ſuffocation, yet complained of no pain at other times: ſwallows bread or ſolids with little difficulty; ſymptoms increaſing; " ſaid he would willingly drink, did not ſomething, which he cannot deſcribe, render the *thought* and *ſight* of liquids diſagreeable:" no ſleep for 48 hours; tongue white and dry; urine ſmall in quantity, but high coloured; belly regular; pulſe feveriſh, hard; little altered by attempts to ſwallow; bled this morning: the antiphlogiſtic regimen being at this time the prevalent practice, profeſſor R. again ordered V. S. gradually to ſixty-ſix ounces; ſick from this evacuation; pulſe ſomewhat ſmaller and ſlower, yet leſs than from this quantity might have been expected: blood not ſizy; ſerum abundant; craſſamentum florid, but looſe: head ſhaved, bathed with vinegar and water, part. equal. Take alſo often a ſlice of lemon with ſugar. Take as a purge every half hour, two ounces of a decoction of rad. gramin. two ounces; fruct. tamarind. one ounce; boil in three pints of water to two; ſweeten with liquorice: take two drams of nitre, divide into ſix parts; ſwallow one every two hours in a doſe of decoction. Inject the following every fourth hour: common decoc-

tion

tion a pint, honey an ounce, nitre two drams. Panada for food. 8, P. M. Medicines given; ſome indurated fœces paſſed; urine high coloured; drops ſome ſediment; pulſe 98: ſtrangury leſs; greater horror to liquids; continue medicines; uſe pedilurium. Take ſyr. diacodii one ounce; repeat every three hours, if neceſſary: take alſo frequently thirty drops of ſpirit nitr. dulc. 6th. at 6 A. M. Clammy ſweat after the bathing and medicines laſt night; noiſe of water in bathing gave diſtreſs; pulſe then 115, tremulous; urine paler; ſlept two hours at different times; free from pain, except when aſked to drink; then pain at pit of ſtomach and belly, with ſighing and convulſions. "In giving drink, it was remarkable, that he always took a ſecond or third draught with leſs reluctance than the firſt; and therefore two or three draughts were commonly given him ſucceſſively." 11, A. M. Pedilurium repeated, followed by an hour's ſleep; pulſe roſe; Hydrophobia increaſed; if eyes be covered, can drink. 8, P. M. Great pain in belly and ſmall of back; moſt acute when ſitting up, or on motion: on drinking, feels a ſtinging pain in ſtomach; none in throat: after drinking, ſweats about head and breaſt, "with vehe-

vehement efforts to vomit, though nothing comes up:" pulſe hard and 104; tongue white and foul; fauces red; urine pale: clyſter given; ſome ſlime followed; hands cold. 10, P. M. On attempting to drink, horror; convulſions, deep ſighings; " and after theſe, retchings, vomiting, increaſed quickneſs of pulſe, and return of pains." Saliva ſpat out with great quickneſs and averſion; does not complain of its bad taſte, neither ſpits on, nor offers moleſtation to by-ſtanders: if he ſlumbers a few minutes, is interrupted by deep ſighs and convulſions; after bathing, pulſe 120, though generally 100, with interruption: voided an ounce of turbid urine; with reluctance took ſome panada; ſlept half an hour. 7th. 8, A.M. Quite delirious lately; now ſenſible; attempts to drink ineffectually. 11, A. M. " Efforts to drink always produce belchings, retchings to vomit, and pains, which begin in the lower regions of his belly, and ſqueeze every thing upwards towards his ſtomach, attended with convulſions and deep drawn ſighs:"---" eyes diſmally wild, red, and inflamed:" talks much of wife and family with great affection; ſpeaks religiouſly; ſays he is dying; pulſe quick, weak, and intermitting. Take muſk ten grains;

repeat

repeat every hour: deglutition being ſtopped, repeat clyſters the oftener: give a little of nitre and ſugar in powder frequently. 4, P. M. Took muſk bolus three hours ago: Death approaches, with pulſe intermitting; cold ſweats; cold extremities: attempting to drink, it regurgitated; ſighed deeply, and--- is no more.

N. B. A looking glaſs placed before him did not diſcompoſe him.

Treatment----Comprehended in the above.

Diſſection. Stomach much contracted; empty.

Small inteſtines---found, except ileum a little inflamed, with a few livid ſpots; ſac of colon as large as one's head, containing air and much fœces. The whole inteſtines diſplaced, and out of their natural ſituation.

Liver---ſomewhat livid; gall bladder much diſtended with bile, tinging conſiderably adjacent parts of colon, of omentum.

Thorax----natural.

Larynx, pharynx, and cranium not opened on account of the ſurgeon's cutting his finger. Is this the caſe alluded to by Morgani?

CASE

CASE XLVII.

Mr. Nourſe's patient, Stephen Bellaſs, aged 16, bitten by a dog on his right thumb, in June 1735.[c]

This took place in London: it is the longeſt of commencement on record of well-authenticated caſes from rabid infection. Whether a ſecond accident had taken place cannot be poſitively known. The great deviation from what I conſider as a general law, would lead me to the concluſion of a ſecond bite; but the vicinity of the patient to Mr. N. with the apprehenſion which the boy and his friends entertained reſpecting the diſeaſe, weakens the ſuſpicion; as, in that caſe, he would have been immediately conſulted, they living in contiguous houſes. The late Mr. Pott attended the patient with Mr. N. in St. Bartholomew's Hoſpital, and ſaw him cut for the ſtone in the interval between the bite and diſeaſe; and remarked, that he never ſaw a wound heal more kindly. The lad was well, and

[c] Vid. Phil. Tranſ. No. 445.

and diſmiſſed within five weeks. He ſaw him likewiſe at the end of nineteen months from the time the bite was given, writhing in all the diſtreſs which Hydrophobia uſually exhibits. This he mentioned many years afterwards in a converſation with Mr. Foot.[d]

The dog, which was of the grey-hound breed, and belonged to the family, was not at the time ſuſpected to be mad. The creature ſeemed not to be angry, but to be even in a playful mood when he ſnapped at the lad, biting him in the *ſlighteſt* manner; but it was evinced in a ſhort time by the animal's dying mad.

Prophylactic. Mr. Nourſe called in immediately after the bite: propoſes a ligature above the part, and the application of the cautery: this not complied with, he next ordered Dampier's powder, at this time in great celebrity. The doſe a dram, given within an hour of the accident, and repeated next morning: went to Graveſend; remained there ten days, dipping daily in the ſalt water: night and morning; alſo took the powder, continuing it for forty days.

Symp-

[d] Vid. Foot's Eſſay on the Bite of Mad Dog, p. 76.

Symptoms. Jan. 11, 1736-7. Evening. Three of the fingers, of the hand not bitten, numb. 12th. Sick; great pain acroſs the patient's ſtomach, and in all his bones; thought to be a cold. Evening. Pulſe full, hard, with ſome fever. When aſked what he ailed, anſwered, nothing, but could not ſwallow. Mouth examined; no inflammation; no appearance ſeeming to prevent ſwallowing. A little ſack-whey offered, and attempted to be drank: the conſequence was, convulſions, horrors, with ſweat over face and head; repetition of ſpoonful of whey; ſimilar, but never ſeverer effects. Night reſtleſs, ſleepleſs. 13th. Morning. Frequent retchings and yawnings. Noon. Violent delirium; foaming at mouth. 7, P. M. Death.

Treatment. 12th. Veneſection; repetition of the prophylactic powders taken at firſt: every four hours clyſter.

Diſſection----None made.

CASE XLVIII.

Profeſſor Plummer's patient, a ſtudent ſeventeen years old, bitten by a dog in the middle finger,

finger, on the right hand, the beginning of Dec. 1728[c].

This was in Edinburgh. In the beginning of January the diſeaſe occurred, being about a month from the accident. Wound ſoon healed.

Symptoms. Pain in the bitten finger, ſtretching up the arm; numbneſs of the finger. Jan. 6. Hot and reſtleſs night. 7th. Night worſe; intenſe pain of the finger; febrile heat, with ſucceeding ſweat: thirſty; attempted to drink beer, but could not. 8th. In the morning attempted again to drink unſucceſsfully, letting fall the cup, and complaining of pain in ſwallowing: pain of head; giddineſs and ſtaggering; ſickneſs at ſtomach. At night ſlept ſome; ſweat moderately. 9th. Speech ſomewhat incoherent; ſighed deeply; reſpiration impeded, with interruption, as he ſaid, to the motion of his heart. During the day convulſions, with diſtortion of countenance; reſpiration quicker; pulſe frequent and feeble; attempted by perſuaſion to drink, but in vain, daſhing it from his mouth with horror and ſhivering. At noon toſſed much; face red

[c] Vide Med. Eſſays, edit. 1, vol. 6, part ii. p. 591.

and bloated; eyes wild and ſtaring; conſtantly ſquirting out his ſpittle; ſometimes ſtarting up ſuddenly from his ſeat, then throwing himſelf down upon the bed; anſwering queſtions compoſedly. Antipathy to his comrade, whom he before loved: was ſubject at this time to gonorrhœa, for which he nightly had taken calomel, and next morning a purgative. This day became furious; attempted miſchief on his comrade, and was obliged to be confined by two ſtrong men: roared, foamed, and toſſed through rage, ſo that the men, by the force of his fury, were heaved up and down as they preſſed with their ſtrength upon him: profuſe ſweat on face, breaſt, and arms: anſwered queſtions at this time rationally: fit laſted an hour; was aſked to drink; anſwered he wiſhed for it, for his thirſt was great: attempting to drink, fixed his teeth in the veſſel; took ſome milk and water into his mouth, but ſquirted it out with violence: convulſed violently, followed by a vomiting of a bilious phlegm, with ſome thick black matter like clotted blood: paroxyſm returned; ſtruggled and attempted to bite. Evening. Foamed at the mouth; violent vociferation; convulſive motion, like the hiccup, but ſtronger: face

diſ-

diſtorted with ſpaſms; ſtill rational, and knew the profeſſors who attended him. At ſix at night died exhauſted.

Treatment. Ordered an emollient and anodyne fomentation, and a cooling diet; bled to ten ounces, with a temporary relief: orifice afterwards broke open with ſtruggling, by which about twenty ounces of blood were loſt. Ordered a purgative ptiſan.

CASE XLIX.

Communicated by Dr. Adams of Daventry, to Dr. James.[d]

William Bland, a farmer of Northamptonſhire, aged 40, applied to Dr. Adams of Daventry, for what he termed a *ſore throat*, ſuppoſed from cold. No ſuſpicion of bite of mad dog. Two days after this Dr. A. again ſaw him;

d Vide James on Canine Madneſs, p. 60. Dr. J. ſays, that it was the death of this man which determined him to ſtudy the diſeaſe. When a boy he knew the patient, who at that time was a celebrated wreſtling champion of the country. His melancholy cataſtrophe made a deep impreſſion on Dr. James's mind.

him; found him reſtleſs, uneaſy, anxious, yet followed his employment: no fever; intellects clear, but difficult deglutition increaſed. Some ale being brought to Dr. A. while he talked with the patient, he ſtarted up from the table at the ſight of the mug, and ran away. Dr. A. now was told, that a little before this he went to draw beer, was frightened on appearance of liquor, running away with ſpiggot in his hand. Was queſtioned now by the doctor reſpecting bite of mad dog; denied it, but reminded by one of the family of a little dog (four months before) who met him coming from market, and was bitten in endeavouring to catch it, and the animal eſcaped. Wound a mere ſcratch, without blood, never recollected till this moment.

Symptoms. Anxiety hourly increaſing; paroxyſms, with convulſions and tremors at intervals, hourly more violent: difficult deglutition increaſing towards death; this took place like one ſtrangled.

Intellects not impaired during diſeaſe: little or no fever.

CASE

CASE L.

Dr. Mead's firſt patient, a lad, bitten by a mad bitch, on the 20th of April, 1709.[e]

This boy was about nine years old; was ſeverely wounded on the cheek; complained of indiſpoſition for the firſt time May 22; appeared dull; pain in the ſtomach; ate a little ſpinach to dinner. This evening head ach; increaſed pain of the ſtomach; drank a glaſs of brandy; night very reſtleſs; ſcreamed out when offered drink; ſtrangury to a great degree, exciting cries on attempting to paſs urine. Next morning vomited up the ſpinach undigeſted, which he ate at yeſterday's dinner. Towards the afternoon this day great aggravation of ſymptoms; ſweat profuſe; trembled much; toſſing inceſſantly; looks wild; pulſe very irregular; urine appeared healthy; inability to ſwallow. Next day (24th) worſe; delirium through the night; white objects offenſive, ſo that he declared that he ſhould be well if the women with white aprons would leave the room.

[e] Vide Mead's Works, vol. I, p. 244, Edinb. 1765.

room. Thirſt conſiderable; aſked to drink from a black pot, thinking a white one prevented him; but tried in vain. Ate now ſome bread and butter heartily, but vomited it up quickly, together with a frothy ſlime: violent convulſions; eyes more ſtaring; pupil greatly enlarged; cold ſweats: death at four this afternoon.

Prophylactic. Wound dreſſed with the common plaiſters of the times; cicatriſed in fourteen days; took a bolus every night of theriac. andromach. ate the liver of the mad dog fried.

Treatment. Bliſters ordered to the back, and each ſide of the neck; diuretic bolus of ſal. ſuccin. camphor, and conſerv. lujul. every ſix hours. Warm bath.

Diſſection. Vide vol. 1, p. 239.

CASE LI.

Dr. Mead's ſecond patient, a robuſt man, aged 45, bitten on one of the fore fingers the laſt week in Auguſt, by a ſmall dog.[f]

This

[f] Vide Mead's Works, ut ſupra.

This patient began to complain on Nov. 8, or ten weeks from the accident. This morning ſickneſs at ſtomach, with a vomiting of green and yellow choler. Next morning deglutition impeded; tried in vain to ſuck thro' a tobacco pipe. 11th. The doctor found him tied in bed; toſſing; vociferating murder; biting and ſpitting at the by-ſtanders; begged to be unbound; tried again in vain to drink; grew again unruly; was again tied down; right arm paralytic; only moved it by the help of the other: attempted to read, but prevented by a miſt before his eyes; afraid of every one; enraged at thoſe he before reſpected; fits again returned; death.

Treatment. Nov. 9. Emetic of rad. ipecacuanha. 10. Veneſection to eight ounces; bolus of theriac. andromach. with lap. contrayerv. 11. Dr. M. firſt ſaw him; directed veneſection to *twenty* ounces; blood very thick and black.

Diſſection---None made.

CASE

CASE LII.

Dr. Mead's third, a young man of 18, bitten by a mad fox on the back of the hand, which had been bitten by a mad dog.[g]

This caſe was communicated to the doctor. It happened at Stamford in Lincolnſhire, ſome time after his other two. Diſtance of diſeaſe from accident was *three* months. Cicatrix not quite complete when diſeaſe appeared.

Prophylactic. Theriac. andromach. to wound.

Symptoms. Convulſions; bit a piece out of the glaſs in which drink was offered; violent priapiſm; penis as hard as a bone: diſeaſe laſted three days.

Treatment. Emetic given at commencement of diſeaſe; bled; bliſtered.

Diſſection. Vide vol. 1, p. 239.

Dr. M. mentions the feſtering of a ſcratch on the ſurgeon's finger, which became very painful, and troubleſome to heal. The ſame thing nearly took place during the diſſection of

[g] Vide Mead's Works, ut ſupra.

of his firſt patient. A ſmall plaiſter being rubbed off the finger, in turning over the parts, the ſcratch it covered was moiſtened: an inflammation followed, with a painful and troubleſome eryſipelas.

CASE LIII.

By M. de la Pryme.

A boy, 14, not bitten, but having only put his hand into a mad whelp's mouth.[h]

"The boy," ſays the author, "took the diſeaſe not from a wound, but merely by putting his finger into the throat of a whelp, when they found it could not ſwallow, to ſee what it ailed." The mother of this, and ſome other whelps, were bitten by a mad dog; became mad, as did all the whelps, in about three weeks after, except this one. After ſome time longer this alſo ſhowed ſigns of the diſeaſe, and in a day or two more died.

Symptoms. Pain of head; feveriſh, and continued better and worſe for ſome time: had

[h] Vide Phil. Tranſ. No. 277.

had a cough; eat hearty, yet could not drink: ſenſation of the cold air gave great uneaſineſs; "he ran from it," as it is expreſſed, "as if it had been to ſave his life, and ſaid, that the wind would needs ſtop his breath." In a day or two more became worſe; vomited a matter like blood, "which ſtunk like ſallad oil, but much ſtronger: after which he would be pretty well, and walk about; but moſt commonly ran as faſt as he could, firſt out of one corner, then into another, then up ſtairs, then down again, as if it was for his life." On the third day of his confinement grew perfectly mad; would ſtart, leap, and twiſt his arms together. His fits were now ſo ſtrong, that four men could hardly hold him: wanted to bite; ſtruggled ſome time longer, and became ſpeechleſs; and, it is added, "then died juſt as the phyſician came."

CASE LIV.

Mr. Turner's patient, a child three years of age, bitten by a dog in the cheek, in 1688.[i]

In

[i] Vide Phil. Tranſ. No. 37.

In this young patient the wound was large. Immediately after the accident they brought the child to Mr. Turner.

Prophylactic. Eſcarotics to prevent the wound from healing were uſed for ſome time. In three weeks the part was healed; two days after the child grew ill.

Symptoms. Febrile affection; "diſorderly pulſe and palpitation of the heart." This night delirium; next day ſtrong convulſions; diſtortion of the eyes; "irregular expanſion of the optic nerve;" (the author means, I preſume, the pupil) with fierceneſs of viſage; watchfulneſs; trepidation; conſtant motion of under jaw; voice hoarſe; hiccup; diſcharge of ſaliva; ſtarted from the ſight of a looking glaſs preſented to him. Died this evening, notwithſtanding the exhibition of *alexipharmicks*. Theſe, it is preſumed, no detail being given, were ſome ſpecifics of the day. His death was attended with ſmiles, or ſpaſmus ſynicus, as Mr. T. calls it.

Treatment----Nothing farther mentioned.

Diſſection----None made.

Mr. T. obſerved that the body externally appeared *livid*.

CASE

CASE LV.

Dr. Howman's patient, bitten by a mad fox in the right hand, 1684.[k]

This happened at Norwich, about the middle of Auguſt. The doctor firſt ſaw him on Wedneſday, October 1, about ſix weeks from the accident. Was told that the wounds bled freely at the time, and ſoon healed ſpontaneouſly.

Symptoms. Some days before pain at intervals in the bitten hand and arm. Thurſday. Bitten hand and arm paralytic. This day "the great ſymptom (Hydrophobia) appeared." Friday. Dr. H. returned; found patient rational. Since yeſterday great ſenſibility of nerves; ſtarting at the ſight of any perſon approaching; complained of ſuffocation on the ſmalleſt motion of the air; voice tremulous; ſpeech broken and interrupted. This night at ten ſymptoms aggravated. Saturday. Died this morning between twelve and one, being ſixth day from commencement.

Treat-

[k] Vid. Phil. Tranſ. No. 36.

Treatment. A purge of ſcurvy-graſs operating violently; V. S. in left arm to ſeven ounces; blood appeared healthy. The doctor preſcribed "the beſt temperate antiſpaſmodic and antiparalytic remedies he knew, to be mixed with the ſpecifics of common uſe in an Hydrophobia." Continue remedies laſt preſcribed. This appears not to have been done, for *another*, he ſays, was called *in* during his abſence, "who gave him many remedies." Dr. H. had been in the country, but returned on Friday to witneſs the laſt hours of his patient's life.

CASE LVI.

Dr. Liſter's patient, James Corton, bitten by a dog in the right hand, about Feb. 5, 1682-3.[1]

This happened at York. The doctor firſt ſaw him on Monday, the 12th of March.

Symptoms. Pulſe ſlow, tremulous, and intermitting on the firſt days: convulſions afterwards at intervals; at intervals rational; for

on

1 Vide Phil, Tranſ. No. 35.

on the day of his death, on the doctor's viſiting him a ſecond time, he found him with the miniſter, praying very earneſtly, and deſiring the ſacrament, ſoon after which he died.

Treatment. Sunday (11th) Took ſome diaſcordium from his apothecary; alſo ſome cordial water was offered, which he could not ſwallow. Monday (12th) Bled in the bitten arm; blood without inflammatory marks, and in every way with an healthy appearance. Wound ſcarified, then covered with bliſtering plaiſter; ſame applied to inſide of arms and neck: antidotes of the day next uſed. "Theriaca, cinis cancrorum, ruta, agaricus, &c. in boluſes." Of theſe took a dram every hour for about twelve times. Tueſday (13th) This day "had a fever on him." On recovering from a fit, "took an helliboriſm in a bolus very willingly." Three or four copious ſtools followed, "and he declared himſelf wonderfully relieved by it."

CASE

CASE LVII.

By Ramazzini, as related by Morgagni.[m]

A maiden lady at Modena, bitten by her own lap-dog in her lip, early in the ſixteenth century.

Morgagni ſays he read an account of this caſe in M. S. which was written by Ramazzini near 80 years before, but who was forbidden (the reaſon not adduced) to publiſh it.

The diſeaſe commenced 50 days after the accident. Whether indiſpoſition had taken place earlier than her diſcovery of dread of water is not abſolutely certain; but comparing it with other inſtances, the probability is in favour of a previous indiſpoſition. The lady however could not be very ſeriouſly indiſpoſed at the time ſhe firſt perceived her averſion to water, becauſe it was during an excurſion into the country, where, happening to paſs over a ſmall ſtream, ſhe was inſtantly ſtruck with horror at the ſight of the water. Nothing was far-

[m] Vide Epiſt. 8, Art. 29.

farther from her thoughts, it is added, than Hydrophobia.

Symptoms. One of the moſt diſtreſſing was the diſagreeable ſenſations produced by cold air. She felt, as ſhe thought, a ſmall wind ſtriking upon her head: "cried out vehemently again and again, that the windows and doors might be cloſely ſhut." The leaſt motion of the bed clothes made her cry out. "If any perſon offered her a fan, then ſhe was exceedingly frightened, and was ſeized with the moſt violent convulſions." Some water was forced on her; dreadful convulſions followed, and ſpeedily after death.

Treatment.---None mentioned.

A SHORT

A SHORT ANALYSIS OF PAPERS RELATIVE TO HYDROPHOBIA,

In the Memoirs of the Royal Society of Medicine of Paris. Part 2, for the Year 1783.

THIS volume, except a paper on the bite of the viper, is compoſed of treatiſes on Hydrophobia.

1. *By Dr. Roure of Aix.*[n]

Elzeard Roche, aged 15, was bitten on the left foot the 3d or 4th of Nov. 1781, by a dog, ſuppoſed mad. The wounds ſoon healed. He continued in good health till the 45th or 46th day from the accident, when he felt a pain in the bitten leg, extending up the thigh, ſo as to make him lame.

[n] Vide page 32.

Dec. 26 (53d day from the bite, and a week after the commencement of the pain in his leg) while at ſupper with his family, he firſt diſcovered horror at the ſight of the fluid he was about to drink, and felt ſome difficulty in deglutition. This circumſtance brought to his remembrance the accident. He became alarmed, and ſent for his phyſician. This was Dec. 29, and 56th day from the bite. At this time the pain of the leg and thigh was acute, but neither ſwelling nor inflammation appeared in the cicatrices. This evening the pain of the limb ceaſed; he paſſed the night in a reſtleſs manner, and his ſaliva became troubleſome. The doctor gave him ſix drops of fluor volatile alkali. Next, mercury was exhibited, yet he died on the third day. Leave could not be obtained to inſpect the body.

2. *By Dr. Thieſſet, of Troyes.*[o]

He gives an account of 20 perſons bitten by a mad wolf, Dec. 1774, nine of whom died of

[o] Vide page 40.

of the diſeaſe. Some of them were opened five or ſix hours after death, and in ſpite of the cold of the ſeaſon, were found ſo *putrid*, that it was dangerous to approach them. In opening one of them the ſurgeon wounded his hand, but no bad effect followed.

A ſerious memorial was preſented to the Intendant of the province, to know whether the diſeaſe could be *inoculated* by *cohabitation* between man and wife.

3. *By Dr. Gallet Dupleſſis, of Carcaſſonne.*[P]

This is the caſe of a man, 46 years of age, bitten by a mad wolf. It was *three months* before the diſeaſe made its appearance, which was in July, 1778. The patient had all the common ſymptoms, with fear of cold air, and dread of water. The only particular ſymptom ſeemed to be diſeaſed *ſmell*, which was to a great degree. He fancied the breath of thoſe around him to be very diſagreeable, reſembling the ſmell of the wolf that bit him.

A diſ-

[P] Vide page 46.

A diſſection was made, but it is not very inſtructive; nor does it ſeem to be made with much accuracy. No notice is taken of the ſtomach. The lungs were ſphacelated in ſome parts. The left ſide of the heart was ſhrunk, and ſoft; the other half was in its natural ſtate: the auricle, which was *flaccid*, contained *black* and *grumous* blood.

4. *By Dr. Mignot de Genety, of Thiers.*[p]

Marie Guittard, aged 60, was bitten by a mad dog Sep. 9. The accident alarmed her exceedingly. Some quack medicines were adviſed by her acquaintance, which ſhe took as preventives. They had ſo far a good effect, that her mind became tranquil. About the end of the firſt week of October ſhe felt a ſlight pain in the wound, which was on the back of her hand, and at the ſame time a proſtration of ſtrength, with a numbneſs ſtretching up the fore part of that arm. The ſhoulder of the ſame ſide was ſimilarly affected. Her inquietude

[p] Vide page 48.

quietude at this time, with frequent pandiculation, pointed out evidently the incipient ſtage of fever. She continued in this ſtate till Oct. 10 (about three days) when, after paſſing a reſtleſs night, the diſeaſe became manifeſt. The oppreſſion was conſiderable; reſpiration difficult, with melancholy. To theſe were added internal heat, and other ſymptoms peculiar to the malady. She was able however to ſwallow ſoup; nor had ſhe the leaſt averſion to liquids. She ſhowed no ſymptoms of fury, but much anxiety and agitation, which continued to her death. An univerſal ſweat covered the ſurface, and her extremities were cold. She died on the night of the 13th, without either fury or dread of water.

By the ſame.[r]

We are preſented here with a caſe of Hydrophobia, from the bite of a mad wolf, in Feb. 1764. It is well marked, having all the ſymptoms uſually found in Hydrophobia. The diſeaſe did not appear till about a *month* had elapſed; and the boy died in 24 hours after.

Diſ-

[r] Vide page 50.

Diſſection. On opening the body the trachea was found inflamed. The *ſtomach* and *inteſtines* were inflamed (meteoriſes) containing a number of lumbrici.

By the ſame.[s]

This is the caſe of a woman, aged 26, bitten in the arm by the ſame wolf, and was ſeized two days after the laſt patient with the diſeaſe, and died in 36 hours.

The diſſection exhibited the ſame appearances with the preceding ſubject.

5. *Caſes of ſpontaneous Hydrophobia, by Dr. Gallet Dupleſſis, of Carcaſſonne.*[t]

The firſt is an inſtance of a poor man ſeized with the diſeaſe from paſſions of the mind. He was compelled, by neceſſitous circumſtances, to labour for his brother, a man of a harſh and auſtere diſpoſition. He toiled hard every day even without a ſufficiency of food. On returning

[s] Vide page 55. [t] Vide page 57.

turning to his brother's, this inhuman relative cruelly upbraided him on account of his poverty: he paſſed two days in great agitation in conſequence of this treatment. On the evening of the laſt of theſe days (4th of July) he refuſed all food, and in ſpite of his thirſt, which was intenſe, could not bear the approach of a glaſs of water to his lips. The air which he breathed was even inſupportable to him. On the 5th the dread of water increaſed, and even the ſight or noiſe of it, when poured out, threw him into violent fits. The air continued to give him great uneaſineſs, and he could ſwallow nothing. On the nights of the 5th and 6th he ſhowed a propenſity to bite thoſe around him. On the 7th he was ſometimes ſeized with fits, which left him in a ſtate of great weakneſs; and at night fell into a convulſion, in which he died.

By the ſame.[u]

The ſecond is the caſe of a young man ſeized with the diſeaſe, from biting his fingers in a fit of reſentment, occaſioned by jealouſy. He

[u] Vide page 59.

He had formed an attachment for a young woman, which was reciprocally returned. They lived in mutual regard for ſome time; but the young man's paſſion ſoon after cooled, and he deſerted his miſtreſs. Her affection increaſed in proportion, and ſhe upbraided him with neglect; but all her entreaties were in vain, ſhe could not recover her lover. Under theſe circumſtances, to rouſe his jealouſy, ſhe feigned a paſſion for a young man of his acquaintance, and which after ſome time, from the young man's aſſiduity, became real. The ſtratagem had the deſired effect: it awoke the other's jealouſy. He now uſed every means to recover her loſt affection, but in vain. Under this violent impreſſion, all hopes being gone, he bit his finger ſo as to penetrate the ſkin; the conſequence of which was, that next morning he felt lancinating pains in the bitten finger, extending up the whole arm. His head became affected; convulſive fits rapidly ſucceeded each other. He was ſeized with a dread of water, refuſed all aliment; the air ſuffocated him; he threatened to bite thoſe around him, and died in a fit on the fourth day.

The

The young woman was ſo affected by his death, that ſhe refuſed every engagement, and lived in a ſtate of celibacy.

Another caſe is related by M. Martin de la Caze.[w] This evidently aroſe from fear, viz. dread of a beating. After ſome altercation, the man who was the ſubject of it was attacked with the diſeaſe, dread of water, the contact of cold air, and difficulty of deglutition. He was a common porter, but of unuſual ſenſibility for his ſtation of life; and deſcribed as of a ſanguine temperament. After ſuffering under the diſeaſe for five days he died.

Diſſection. The œſophagus was found in its natural ſtate; the ſtomach ſhrunk, and its veſſels turgid with blood. The reſt of the diſſection ſeems foreign to our purpoſe.

Another related by Dr. Seganville, of Lavaur,[x] aroſe from mania, induced by intoxication; one of the ſymptoms of which was a dread of water. The patient was attacked with a ſenſe of burning heat at three in the morning, and died at five that day.

[w] Vide page 60. [x] Vide page 71.

6. *Next is a Paper on Satyriaſis followed by Hydrophobia.*

M. Salva communicated to Dr. Bouteille the caſe of a man, 36 years of age, who was, on Monday, Nov. 10, 1783, attacked with an inceſſant erectio penis cum ſeminis emiſſione copioſa.[y] In this ſtate he remained, more or leſs, till the 15th. He then became thoughtful, ſad, and oppreſſed, and harraſſed with the ſame ſalacious propenſities; yet, though a married man, from ſome extraordinary apprehenſions, he remained continent for ſome days.

On the 16th a complete Hydrophobia came on: even the noiſe of water poured from one veſſel into another diſtreſſed him. In a word, he had all the ſymptoms which attend the diſeaſe from the bite of a rabid animal. On the 18th he became furious and delirious, ſo as to require to be bound. He ſpat much upon the by-ſtanders; continued to have the ſame averſion to liquids, and at eight in the evening of the 19th he died.

M. Bou-

[y] Vide page 84.

M. Bouteille obſerves, that the ſymptoms in this patient were exactly ſimilar to thoſe of ſix perſons whom he had ſeen die hydrophobic, at Siſteron, in 1772, from the bite of a mad dog. This however was a caſe of ſpontaneous Hydrophobia; for on the ſtricteſt inquiry it appeared, that he never had been bitten by any rabid animal.

The moſt remarkable circumſtance in this caſe is, the urgent ſatyriaſis.

M. Salva conſiders the remarkable part of this caſe to be, not that the Hydrophobia was ſpontaneous, but that it was a ſymptom of the ſatyriaſis.

7. *By Dr. Houſſet, of Auxerre.*[z]

The caſe he details relates to a mad ſhe-wolf attacking and wounding ſeveral perſons and dogs at Vallau, and other villages, in the neighbourhood of Auxerre. The author is very particular in deſcribing the manner in which they were bitten, and the number wounded.

[z] Vide page 110.

wounded. In theſe minutiæ it is not neceſſary to follow him.

One of them, Louis Michaut, bitten in the cheek, is repreſented as becoming hydrophobic at the diſtance of *three* months from the bite; and after ſtruggling with the diſeaſe ſeven days, died in the uſual way. His wounds were dreſſed with a camphorated mercurial ointment; and he truſted to the internal uſe of an omelet that was recommended to him.

8. *M. Burchard Frederic Munch preſents us with a Paper on the Efficacy of the Belladonna in Rabies.*[a]

This author reminds us, that both Pliny and Apulius have ſpoken of the external uſe of the leaves of belladonna in rabies: but that Mayerne was the firſt who recommended its internal uſe; yet it does not appear that he had ever made trial of it. It was long neglected, till one Richter, a miner, uſed the powder of the root, as a noſtrum for the ſame purpoſe; which,

[a] Vide page 115.

which, in 1728, he communicated to M. Hanſen, from whom it paſſed to M. Munch, the father.

Nothing but looſe obſervations in regard to its efficacy were publiſhed, till 1773, when a M. Ruling communicated the caſe of a girl ſeverely bitten by a mad dog, to whom he adminiſtered, as he ſays, with the greateſt ſucceſs, the powder of the leaves of this plant. Dr. Schroder alſo informs M. Munch, that he had given the powder of the root with ſucceſs to four men, three of whom were bitten by a mad dog, and one by a mad cat.

M. Munch continued his reſearches, and in 1779 he communicated to Dr. Richter eleven obſervations, which the latter publiſhed in the Chirurgical Journal. In theſe he affirms that this remedy is not only a prophylactic, but alſo a cure of rabies. M. Munch pretends to have more than an *hundred* caſes wherein the leaves and root of this plant proved efficacious. Among theſe there are two wherein it was given in the firſt ſtage of the diſeaſe.

The author then proceeds to deſcribe the effects of this remedy upon the human body, which are nearly ſimilar to thoſe produced by hemlock. Beſides its more immediate effects

fects as a narcotic, it is ſaid to operate by urine and ſweat. He endeavours alſo to make it appear, that it may be equally uſeful in the more advanced periods of the diſeaſe, when Hydrophobia has actually taken place. He then proceeds to detail the doſes of this plant, and the manner of cultivating it in gardens, which we think unneceſſary to deſcribe here, eſpecially as the caſes are altogether vague and inconcluſive.

9. *Caſes by Meſſ. Poiſſonnier, Deſperrieres, Andry, Vinq-d' Azyr, Delalouette, the Son, and Thouret.*[b]

The firſt in this paper is of a boy, 12 years old, named Briquet. He was one of 15 bitten by the ſame mad dog. He became affected 58 days after the bite, having uſed mercury for three or four weeks, and been ſlightly ſalivated. He was firſt affected in church, and in returning home and taking a little wine, it was vomited up a ſhort time after, with a quan-

[b] Vide page 126.

quantity of black matter. The firſt ſymptom was announced by an unuſual effect of the air, which by inſpiration ruſhed up his noſtrils, creating a pain in the temple, and in the courſe of the frontal ſinuſes. The following night at 9, P. M. it was obſerved by the Prior of the Charití (the hoſpital where he had been ſalivated) that the bitten cheek was ſwelled, but the lad, on being interrogated, denied to have felt pain in the cicatrices. They applied the actual cautery to the wounds, and the plan they purſued was ſudorific. Eau de luce was the medicine given, and in the doſe of ten or twelve drops every three hours. On Tueſday, the fifth day from the attack, he ſwallowed with tolerable eaſe, and ſpat conſiderably. The phyſician wiſhing to try the effect of muſic on a perſon in this ſituation, ordered a guittar to be played in the chamber, the ſound of which the lad not only bore with eaſe, but ſeemed to be pleaſed and ſoothed by it, while the pulſe at the ſame time became more regular. On Monday, 10th day from the attack, at 5, A.M. he vomited a large quantity of brown and black matter, and it was ejected with ſuch force as to ſtrike the bottom of the bed; and in about an hour and half after died.

The

The body was opened three days after death. No marks of diſeaſe appeared in the œſophagus. In the ſtomach a quantity of viſcous and browniſh black fluid, with a lumbricus, was found; and 13 more, with ſome of the ſame fluid, in the ſmall inteſtines. The blood in the auricles was black and fluid. The heart ſound, and no water in the pericardium; nor in the thorax, abdomen, nor ventricles of the brain. The pancreas, liver, and ſpleen were ſound. The lungs ſomewhat collapſed. This boy was bitten Jan. 27. The diſſection is of little uſe, on account of the time that elapſed between death and the examination.

Catherine Champion, 55 years old, was bitten on the lip and cheek, on the ſame morning. She was of a very melancholy temperament, and ſubject to aſthma. On the 30th day from the bite ſhe became affected with Hydrophobia. On carrying her from the apartment of the hoſpital where ſhe had been placed, to a different one, having to paſs a court, and it ſnowing at the ſame time, ſhe was much agitated at the ſight, altho' it was at night. Among other ſymptoms common to the diſeaſe, the author expreſſly notices vomiting.

miting. She ſpat often, and roped it herſelf from her mouth with her fingers. Convulſions were frequent; ſenſibility to the cold air great. Pulſe weak, interrupting, and vacillating. The plan purſued was ſudorific. The doſes of the medicine were in powder, and theſe large and frequent. She became blind; and it was particular, that as the diſeaſe advanced her temper changed; for naturally it was moroſe, gloomy, and taciturn; but it was now changed to one placid and affable; and as the ſenſations increaſed ſhe was more lively. She recovered her ſight in nearly half an hour. This patient had the ſenſation of flames ſcorching her back and belly, and could not be perſuaded to the contrary, deſiring her phyſician to feel, that he might be convinced of it himſelf. Not long after this ſhe died, about three days after the diſeaſe firſt appeared.

Diſſection. No inflammation either in the fauces, larynx, or pharynx; but the membranous parts of the cartilaginous rings of the bronchiæ were ſomewhat inflamed. The œſophagus was in its natural ſtate. The lungs natural: in the vena cava and axillary veins the blood was *very fluid* and *very black*. No ſerum in the pericardium: the heart was in its

natural ſtate. On opening the ſtomach there was obſerved on the internal coat of its great curvature, and towards the fundus, ſeveral points of inflammation; and in the ſmall inteſtines there were ſeveral of a ſmaller ſize. The liver was in a healthy ſtate, and the bile in the gall bladder very fluid. On examining the brain the veſſels were found turgid with blood, and no water in the ventricles.

The Sieur Gravan, one of the 15, aged 72, of ſmall ſtature, lean habit, and melancholy temperament, was bitten on the naked hand, and from the moment of the accident conſidered himſelf as loſt. Mercury was the prophylactic treatment here likewiſe, and the ſalivation was carried on to a conſiderable extent, by which, and the uſe of purgatives, he was greatly reduced. On the 27th, 28th, and 29th he felt ſlight chills on going to ſleep. On the 36th day of the treatment (and 38th from the bite) he felt the firſt ſymptom of difficult deglutition. The wounds which had been enlarged, on the 7th day continued open. Finding the methods employed for the other two uſeleſs, they determined to try vinegar ſaid to have been a ſucceſsful remedy in this diſeaſe. This was exhibited in the form of injec-

injection, by acidulated drink, and by inhaling the vapour, which laſt they were obliged to omit, as he complained of its ſuffocating him.

Having obſerved in the woman Champion ſome advantage in ſwallowing from the uſe of bliſters round the neck, it was applied in this caſe apparently with ſome ſlight benefit. On the ſecond day of the diſeaſe he had an inclination to *vomit*, and did ſpit up ſome glairy matter. By continual efforts to vomit during the night, he diſcharged nearly a gallon of a thick glairy matter. Doſſils dipped in warm vinegar produced ſhivering and diſagreeable ſenſation. The vomiting continued through the night, till twelve next day. The quantity of vinegar in each injection was three ounces. The agitation and horror expreſſed at the approach of drink were great: he frequently threw the veſſel on the ground. At 9 at night felt the current of cold air very diſagreeable: a pinch of ſnuff cauſed the ſame uneaſineſs. Two grains of opium in vinegar was adminiſtered, which produced tranquility, but no ſleep. At ſix o'clock on the morning of the third day the agitation was very great: he attempted to throw himſelf out of bed, which they were obliged to prevent by force.

He

He diſcharged a quantity of ſaliva, and uttered plaintive cries, complaining of pains all over him. The opium and vinegar draught was again adminiſtered, and again produced tranquility without ſleep. He became at length furious, and they bound his feet together, which increaſed his fury. All his ſymptoms increaſed till ſix o'clock on the evening of the third day, when he expired in a ſtrong convulſion.

Diſſection. The body was opened about 16 hours after death. There was no inflammation in the pharynx, larynx, nor œſophagus. The right lung was ſomewhat ſhrunk. On the ſtomach there were found points of ſlight inflammation; and its internal coat, near the pylorus, appeared very *ſoft*, and as if *macerated;* and this condition approaching to *ſphacellation*, was more diſtinct in the duodenum; and there were ſome points of a ſlight inflammation towards the termination of the ileum. The other viſcera were found. The abdomen, thorax, and pericardium contained no ſerum. The heart was found, containing no coagulated blood; but in the aorta was a very large quantity of blood nearly fluid, and of a black colour: the venous blood was of the

ſame

ſame quality. On opening the head the blood veſſels appeared turgid, eſpecially the longitudinal ſinus. A conſiderable quantity of water was found in the ventricles.

10. *Caſes of Perſons bitten in* 1784, *near Brive, communicated by Meſſ. Rebiere, two Brothers, and Surgeons at this Place.*[c]

No fewer than 17 perſons were bitten by a mad wolf on this occaſion, ten of whom periſhed by the diſeaſe. Nine continued from the ſecond to the third day after the appearance of the firſt ſymptom, and one to the fifth. The author informs us, that theſe perſons died in the following order: The firſt on the 15th day from the bite; the ſecond on the 18th; the third on the 19th; the fourth on the 28th; the fifth on the 30th; the ſixth on the 33d; the ſeventh on the 35th; the eighth on the 44th; the ninth on the 52d, and the tenth on the 68th.

Mer-

[c] Vide page 208.

Mercury was uſed in all theſe caſes, and the patients were more or leſs ſalivated. Their wounds continued open till the time of their death, except the tenth, which healed up eight days before. They applied vipers to two of them on the firſt day, and to a third on the ſecond day of the diſeaſe. No effect was obſerved from this bite, except a ſlight areola round the orifice, though the vipers were ſtrong and lively. The concluſion to be drawn from theſe experiments is, that the poiſon of the viper had no effect in deſtroying the hydrophobic virus; and the author very properly remarks, that the practice cannot be hereafter followed with hopes of ſucceſs, but on the contrary, to ſay no worſe, muſt produce additional irritation. The patients followed their common occupations till the appearance of the diſeaſe.

11. *Some*

11. *Some critical Remarks on the Abbe Fontana's Treatiſe concerning the Poiſon of the Viper, by M. de Roux, of Dijon, which obtained the firſt Prize from the Royal Society of Medicine, March* 11, 1783.[d]

In this paper M. Roux treats of local nervous irritation, as chiefly giving riſe to the ſymptoms ſucceeding the wound, in contradiction to Fontana, who conſiders its action to be chiefly on the blood. He lays down two indications of cure: firſt, to diminiſh the ſenſibility of the nerves; ſecond, to weaken the power of the venom, or to extract it completely from the part. He gives an example of a country woman bitten by a viper on the fore finger of her right hand. In this caſe he applied a ligature below the wound, and directed the part to be fomented with olive oil for the ſpace of a week, and the ligature to be removed next morning.

[d] Vide page 213.

12. *Far-*

12 *Farther Remarks on the Bite of the Viper, from a Paper ſent to the Royal Society of Medicine, by Meſſ. Chauſſier and Enaux, Surgeons, at Dijon.*[e]

In this memoir both the bite of the viper, and that of rabid animals are conſidered. Volatile alkali, and eau de luce are the remedies, in their eſtimation, moſt uſeful. The external treatment is directed to be made with pure volatile alkali, fomenting the part, and applying compreſſes, well ſoaked in it, of about an inch in ſize. A quarter of an hour after or ſo warm olive oil is to be well rubbed in, and the whole is to be covered with a linen bandage, taking internally at the ſame time volatile alkali. In recent caſes, before marks of much debility appear, theſe means, they think, will be ſucceſsful.

But if the diſeaſe has produced more violent effects, it will be neceſſary to remove the centre of irritation, and deſtroy the part. Cauſtic is the means recommended. Gunpowder has

[e] Vide page 218.

has been uſed; ſpirit of wine alſo dropped on a piece of cotton, and preſſed to the bottom of the wound. It may be neceſſary occaſionally, they think, to enlarge the wound by deep ſcarifications, filling it with butter of antimony. Two or three hours after this oil of olives is to be rubbed on, and ſoaked into the part.

The internal treatment in theſe caſes is volatile alkali. The moſt convenient form, they think, is that denominated fluor volatile alkali, or eau de luce, which differs only from the other by a few drops of oil of amber. This medicine would be too powerful in its pure ſtate; it muſt therefore be diluted. To delicate and weakly perſons the doſe ſhould be two or three drops: to the more robuſt, from 12 to 15. Should no volatile alkali be at hand they give as a ſubſtitute a preparation of M. de Morveau.

Take a ſmall quantity of ſal ammoniac coarſely powdered, in a ſpoon or any convenient veſſel: take an equal quantity of ſalt of Tartar. Diſſolve them: mix them together, and immediately ſwallow them. Care is to be taken leaſt the mixture evaporates. A little tea or the like may be taken after it. The volatile

tile alkali ſhould be preferred when it can be obtained: it is an excellent remedy both in aſphyxia and in ſyncope.

13. *A Paper on Hydrophobia, by M. de la Roux, Surgeon, at Dijon.*[f]

This appears to be a continuation of the ſame diſſertation, which obtained the firſt prize on the 11th of March, 1783.[g] In the former part he treated of the viper; in the preſent Hydrophobia, eſpecially the ſpontaneous, is conſidered.

In this paper, treating of the ſpontaneous Hydrophobia, which he defines "Hydrophobia from an internal cauſe," he maintains the doctrine of nervous irritation and ſympathy, ſimilar, in ſome reſpects, to what has ſince been advanced by Drs. Percival and Ruſh. An irritation ſtimulating the extremities of the nerves, particularly thoſe of the alimentary canal, ariſing from the application of extraneous

[f] Vide part ii. p. 1. [g] Vide p. 503.

traneous matter, ſuch as the contents of the canal perverted from the healthy ſtate by want of drink, acrid aliment, paſſions of the mind, uniting with fatigue. He relates an example of Hydrophobia ariſing from each of theſe cauſes.

The firſt is of a young man over-fatigued, by a quick journey in a hot day, without an opportunity of quenching his thirſt. The ſecond of a young lad who ate a large quantity of roaſted beech nuts, an indigeſtible food. The third of a young woman, whoſe mind was highly agitated by repelling the attempts of a libertine from committing a rape on her. In each of theſe caſes the ſymptoms of Hydrophobia were well marked, and they proved fatal.

He adduces ſeveral caſes of tetanus, and violent ſpaſmodic affections, from the bite of the viper, remarking, that if theſe have their peculiar ſymptoms, we need not be ſurpriſed that the Hydrophobia has its peculiar ſymptoms, the kind of irritation alone producing the difference. When the virus is introduced by a bite, he is of opinion, that it is not yet completely venomous, though with a conſiderable diſpoſition to become ſo; and that it frequently

quently requires a long time to become a poiſon. *He* thinks, that ſhould this poiſon be carried into the circulation, and be mixed with the fluids, it would be ſo diluted as to be incapable of producing the diſeaſe, which he ſuppoſes it incapable of producing, unleſs it was at reſt, and confined to ſome circumſcribed part, beyond the reach of vital action.

Among other circumſtances in ſupport of his theory, he relates the following caſes.

Jean Petit, a child five years old, was bitten on the 15th of March, 1780; and, with other ſevere wounds on the head and face, had one on the great angle of the eye, which, as it was not certain the dog was mad, and for fear of deſtroying the eye, M. Roux did not treat with cauſtic, as he did the other wounds. The conſequence was, that it healed up, as well as did the other wounds, except the one on the cranium, which remained open, and from which an exfoliation took place.

On the ſixth of May following this eye inflamed, and the wound breaking open, diſcharged a bloody ſerum. The other wounds remained cicatriſed, and without change of colour, while that which continued open on

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the head, ſuppurated as uſual, without any appearance of inflammation or change.

The patient became indiſpoſed, with ſome ſubſultus tendinum, for ſix days: conceived he ſaw phantoms coming to pluck out his eye, and continued ſo until the 12th of May, when he began to refuſe drink. Next day he could drink nothing: he was convulſed; diſcharged a frothy ſaliva; his eyes were wild and inflamed, eſpecially the diſeaſed eye, which was extremely red; and he died on the night of the 16th.

Francois Ethevenoit, a woman of 37 years of age, was bitten by a cat on the fore arm, near the wriſt, and had no uneaſineſs about her ſituation till after the healing of her wounds. To render her mind tranquil and compoſed, he ſcarified the cicatrices, and applied to them butter of antimony. He gave her 12 drops of volatile alkali morning and evening, in a cup of tea. The ninth of June following (44 days after the bite) ſhe began to feel ſome lancinating pains in the wriſt, and on examining the wounds, that on the internal part of the arm, in the courſe of the tendon of the internal cubital, appeared inflamed, ſwelled, and painful. She would not ſubmit

to

to exciſion. She took antiſpaſmodics for ſome days, but afterwards refuſed them. The pains of the wriſt increaſed, and extended up the arm to the ſhoulder. All the ſymptoms increaſed. Hydrophobia took place on the 15th of June, and ſhe was found dead on her bed on the morning of the 18th.

Jean Arbelot, bitten on the 15th of March, 1780, left the hoſpital on the 18th of May, though he had a ſwelling on the left cheek. He returned on the 22d, with the Hydrophobia, which became complete on the 24th, and he died on the night of the 26th. The wound on his cheek, which was cicatriſed, had on it a black cruſt. We are referred afterwards to a particular detail of the caſe.

M. Roux, who appears to be a man of ſtrict obſervation, from the caſes that came under his cognizance, thinks himſelf authoriſed to divide the diſeaſe into *two* ſtages, of which the ſymptoms of *difficult deglutition* marks the boundary. In one of his patients the incipient, or firſt ſtage, laſted ſix days; in the ſecond the ſame number; in the third he could not ſo certainly mark the period, but believed it to be ſix. Sauvages is among the few that has made ſomething like this obſervation.

vation. It was in a caſe which he notices in his Diſſertation on the Hydrophobia, to which the prize of the Academy of Thouloufe was adjudged. The perſon had totally forgotten that he had received a bite, till he felt pains in the wounded part. He marked the diſeaſe from the commencement. He experienced exacerbations alternating with intervals, and ending with a ſweating ſtage, in the common form of an intermittent, continuing eight days.

M. Roux relates more examples, taken from the caſes which happened at Senlis, in proof of this obſervation. He obſerves likewiſe, that the firſt ſtage commences with ſome change in the part bitten. Our author, as well as Sauvages, with the greateſt probability of truth, is of opinion, that the virus remains in the part, locally fixed, without mixture with the blood, till the commencement of the diſeaſe. He thinks alſo, that after the appearance of Hydrophobia the diſeaſe is incurable. Temperament, according to him, is the chief cauſe of the diſeaſe appearing at different periods from the bite. To this however he is inclined to add both the quantity and the quality of the virus introduced.

With

With reſpect to the ſpontaneous Hydrophobia, he thinks that it makes a more rapid progreſs than the communicated. The reaſon given is, that the irritating cauſe is ſpread over the alimentary canal, which is extremely ſenſible, from its numerous nerves communicating with the whole ſyſtem.

Themiſon was the only phyſician among the ancients who pretended that the diſeaſe was cured in the laſt ſtage: this, he thought, was that of his own caſe; for having attended one of his friends who died of it, he fancied he had got the diſeaſe.

M. Roux quotes Nugent's caſe of Elizabeth Bryant, and paſſes the ſame cenſure on it which I had done in the firſt edition of my Remarks, and now repeat in this. It is ſatisfactory to be ſupported in this opinion by ſo accurate an obſerver. His paper however did not fall into my hands till twelve years after I had written that criticiſm. His remarks on her caſe appeared in the diſſertation now under conſideration, in 1783; yet though I publiſhed in 1785, I did not ſee them till May, 1797, while I was re-conſidering the diſeaſe, and preparing this edition for the preſs. I am no leſs gratified to find this ſenſible author

thor coincide with me reſpecting the uſe of mercury. He reprobates it both as a prophylactic and cure. He aſſures us of ſeveral caſes where mercury had been uſed, which terminated fatally, after the patients went from the hoſpital, ſuppoſed to have been cured.

M. Thieſſet ſaw ſeven perſons die of Hydrophobia, though treated with mercury, of whom one periſhed the 58th day of his wounds, after 22 frictions. Dr. Oudot, of Beſancon, ſalivated a female patient, yet ſhe died hydrophobic five months after the accident. M. Laſon ſalivated ſix; three died. Dr. Revelat of Vienne, in Dauphine, loſt a female patient, bitten by a mad cat, though treated with mercury. Dr. François treated with mercury three patients bitten by a wolf, yet they all died.

M. Roux cites ſeveral other caſes, and the teſtimonies of many practitioners of eminence to prove the inutility of mercury.

The author concludes the ſecond part of his paper, which he divides into three, with obſerving, that as the diſeaſe is local we can have no expectations from mercury acting on the habit in general. He ſuggeſts the propriety of cutting out the piece, even when the Hydrophobia appears. He thinks there is a chance

of eſcaping by this means, though no wiſe man will wait ſo long, if he has an opportunity of acting ſooner.

The third part of his paper he employs in conſidering the cure. He begins by deprecating ſpecifics, and he makes a nice diſtinction between the ſpontaneous and inoculated diſeaſes, on which he founds his method of cure. The internal or ſpontaneous being, according to him, produced by certain fluids, eſpecially in the inteſtinal canal, which act by irritating the nerves of thoſe parts. For this ſpecies he exhibits internal remedies. To remove the inoculated, which he thinks acts on the parts of the nerves, where the poiſon touches, he has recourſe to external means.

In treating the ſpontaneous ſpecies he admoniſhes to proceed, as in caſes where actual poiſon had been ſwallowed, with mucilaginous drinks at firſt, and afterwards directs them to be ſharpened with emetics to excite a ſlight contraction in the alimentary canal; becauſe he finds ſuch remedies to ſucceed both in vegetable and mineral poiſons. After theſe he adviſes the uſe of milk and oleaginous ſubſtances to envelop, according to his ideas, the acrid particles, and to diminiſh the irritation

of

of the inteſtines; and afterwards to nouriſh with farinaceous ſubſtances, and ſuch as reſiſt putrefaction. Afterwards, when the diſeaſe appears, he gives antiſpaſmodics and opiates, but without much expectations from them. Thus of the ſpontaneous.

With reſpect to the inoculated, he lays great ſtreſs upon exciſſion, and mentions, in a very judicious manner, the attention that ought to be paid to the direction and depth of the wound; and the better to diſcover this, he adviſes inquiry to be made into the age, ſize, &c. of the animal. After dilating the wounds, ſuffering them to bleed freely, and binding them up till next morning, he applies *deliqueſcent butter of antimony*, as a cauſtic to them. He applies the cauſtic by means of a wooden probe, to the bottom of the wound, and extends it all over it, and part of the neighbouring ſkin. The reaſon he gives for not applying the cauſtic at the time of dilating the wound appears highly judicious; the blood mixing with it dilutes it ſo much that its action is conſiderably prevented; whereas when applied next day it deſtroyed the parts immediately to the depth of ſeveral lines, and over all he applied a bliſter.

After

After this operation he keeps the wounds open for 40 days with peas, gentian, or iris root, in the form of iſſues. Internally he exhibits the *volatile fluor alkali*[h] in an infuſion of elder flowers. The doſe for an adult being twelve drops morning and evening. He does not adminiſter this as a cure for the diſeaſe, but merely as a ſtimulant to produce ſweat, &c.

He gives an account of eleven perſons who were bitten by a mad wolf, nine of whom were brought to the hoſpital at Dijon, and accounts were ſent to him from the country of the other two. Four out of the eleven died. M. le Roux confirms the obſervation, that mad dogs are ſhunned by other dogs.

14. *Some Obſervations on Hydrophobia by M. Baudot, to whom the Society adjudged a Share of their ſecond Prize.*[i]

In ſpeaking of his endeavours to remove the abſurd fears of approaching perſons bitten, he relates

[h] Eau de luce, with the addition of oil of amber.

[i] Vide part ii. page 89.

relates the circumſtance of a child being ſuckled by a ſhe goat for three weeks, viz. untill the day that the goat died of the Hydrophobia. He relates ſeveral caſes of cows bitten by a mad wolf; and that ſeveral infants were nouriſhed by their milk, and the butter made from it. This they uſed with impunity till the day on which the animals died of the diſeaſe. He obſerves farther, that the human ſpecies, with impunity, cohabit together, and inſtances a girl who lay with a ſoldier till his death. The concluſion is, that the infection does not reſide in the fluids of the body; but his opinion is, that it exerts its malignity on the nerves, and extends to the whole nervous ſyſtem. He admits the ſaliva to be infected, and pertinently aſks by what means this comes to paſs? He thinks it may happen in three ways. 1ſt. From the particular affinity of the virus to the ſaliva, to the excluſion of the other fluids. 2nd. It may be communicated by the tainted nervous fluid. 3rd. He inquires whether there may not be a diſeaſed ſecretion of the ſalivary glands ariſing from ſome change in their figure? He inclines to this opinion more than to the other two. He ſuppoſes the virus to act by irritating the nerves, and on this

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founds his method of cure, which, according to his phraſe, is to relax the nerves. He recommends ablution with ſalt and water, bliſtering plaiſters, warm olive oil, and mercurial friction; and then gives a number of caſes in which he thinks this proved preventive.

The author of this paper relates a noble inſtance of the patriotiſm and bravery of an inhabitant of Aligny, named Antony Thouveneau.

A mad wolf entered the pariſh near the entrance of the village, and bit a woman during the time of evening prayers. The inhabitants were then ſuddenly aſſembled by the ringing of an alarm bell to purſue the wolf. Antony Thouveneau, armed wih a fuſeè, loaded only with ſmall ſhot, cloſely purſued the wolf. The creature advanced; he fired, and put out an eye. At this inſtant Thouveneau ran for concealment behind a hedge, which was near, and to load his piece. Returning to the wolf, who advanced to the combat, he fired a ſecond time, and hit it on the head, and haſtily fled behind another hedge, to load his piece again; but as the wolf now took its direction towards the village, reflecting on the miſchief it might produce, he reſolved to expoſe

expoſe his life, rather than that the inhabitants ſhould ſuffer. The animal turned on him; he preſented, but his piece miſſed fire. He ſtruck at it with the but end; but miſſing his aim the animal leaped on him, and fixed its foot on his breaſt. This courageous citizen, to avoid being bitten on the face, preſented his right elbow, daſhing it into the animal's open mouth, ſo that it was forced into its throat, and laid faſt hold of it with his left arm. The combat was long. Thouveneau now found his ſtrength greatly exhauſted, when fortunately, at that moment, aſſiſtance arrived. He deſired two men who came up to ſeize the wolf by the neck, aſked for his knife, and with it cut the animal's throat. So firmly had the creature fixed his tuſks into his arm, that they could not be diſengaged without the aſſiſtance of a wedge. Our hero was wounded on the fore arm, yet he, and all the others, except two, recovered.

This author relates caſes of perſons bitten by a mad wolf in June, 1765, in the pariſh of Giri, near St. Bonneau. They all truſted to pretended ſpecifics. The animal bit ſeveral dogs and cattle, all of which periſhed by the diſeaſe.

Peter

Peter Deplain died the 20th day from his wounds: one of the ſons of Boſquet the 53rd: the widow Perronet the 42nd; and Edmée Thibaudat the 57th. The youngeſt ſon of Boſquet was the only one which M. Baudot attended, and this happened after the death of the others. According to our author he was cured after the firſt ſigns of the diſeaſe, by his method of treatment. He mentions a perſon named Maſſelon, who died in 25 days from the wound.

15. *The Paper to which the other Part of the ſecond Prize was adjudged is by Dr. Bouteille, of Montpellier.*[k]

In this diſſertation are diſcuſſed a variety of opinions, and ſeveral obſervations related, with ſome pathological and phyſiological remarks. Caſes are likewiſe detailed, many of which cannot be intereſting to the reader, and are foreign

[k] Vide part ii. page 129.

reign to our purpoſe. He confirms the obſervation, that perſons may with impunity handle the ſaliva of other perſons under the diſeaſe. He notices likewiſe, that the fear of water is not a ſymptom peculiar to the diſeaſe in brute animals, and mentions the inſtance of a mad wolf which ſwam ſeveral times acroſs the river Argents; and of dogs which drank water.

This author believes in the accounts of the diſeaſe having returned at ſtated intervals for many years, and cites ſeveral *pretended* inſtances of it. So much credulity is diſplayed in this paper, that to avoid waſting the reader's time I ſhall paſs it over. He returns ſo often to his favourite caſe of the *certain cure* of Elizabeth Bryant, by Nugent, that I preſume the reader will not regret the omiſſion, who, after careful peruſal, is ſatisfied that this patient's diſeaſe was not *rabid* Hydrophobia. He relates ſome inſtances of perſons bitten by a mad wolf, who, after thinking themſelves ſecure, and refuſing to continue the medicines, died, one 38 days from the bite, another the 44th, and a third three months after. This laſt was an old and feeble man of 60. He is

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of opinion (and perhaps he is right) that the bite of a mad wolf is more dangerous than that of the dog, from its virus being more acrid, on account of its fierceneſs, hungry famiſhed ſtate, and its bite being oftener on the face and neck, and at the ſame time tearing deeply the part.

16. *Caſes by Dr. Empereur.*[m]

Three caſes are related in this paper, where bites were received July 8, 1781, from a mad dog. The firſt was a man-cook, 30 years of age, bitten on the palm of the hand. He became affected the 20th of Auguſt. He vomited the whole night violently. Next day he had the ſame propenſity, nauſeating every thing he took. He expreſſed a great inclination to bite the by-ſtanders a little before his death, warning them of their danger, but adding, he ſhould not gratify this deſire on them, but

[m] Vide part ii. page 222.

but ſhould rather bite his own ſhoulders and arms. Immediately on his death, which was preceded for ſome time by an uncommon noiſe, his body was covered over with *livid* ſpots.

The next was a child ſix years old, named Caſtinel. He was bitten on the upper lip, near the noſe, by which two of his teeth were diſplaced. He became affected on the 9th of September, and died on the 15th. He vomited the day before his death, and what was ſingular, his body became *cold* immediately after his deceaſe. A circumſtance ſingular alſo in the caſe of this child was, his being attacked with a ſevere *angina* in the interim between the bite and diſeaſe, which ran its courſe in the common way, and diſappeared before Hydrophobia commenced.

The third, a boy ten years of age, named Joſeph, was bitten in the arm-pit, and eſcaped. The author ſeems to inſinuate, that being wounded through his ſhirt, the dog's teeth might have been wiped by this means, ſo that none of the ſaliva penetrated the integuments. He underwent indeed the ſame mercurial treatment with the other two, for more than the

the ſpace of a month, they both having undergone ſalivation.

We are next preſented with an extract from a memoir, detailing the caſe of an advocate.[n] He was bitten by a ſmall dog of his own, which he would not ſuffer to be killed; and ſix months after he took the diſeaſe. The only peculiarity was a vomiting of *black* blood, and the body turning *livid* after death. He drank freely, and called frequently for drink, and deſired to be put into the bath before his death.

Then follows another caſe,[o] ſhewing the evil tendency of the doctrine ſo long inculcated, that a perſon may take the diſeaſe *many* years after he has been bitten by a mad animal. A young man had been bitten three years before, and after ſuffering daily inquietude, and experiencing much miſery, with loſs of appetite, fleſh, and health, he came for advice to the relator of this caſe. He is deſcribed to be in a moſt wretched ſituation, queſtioning the doctor, and doubting whether he might not take the diſeaſe at any *future* period howſoever *diſtant* from the accident.

After-

[n] Vide part ii. p. 234.

[o] Vide part ii. p. 241.

Afterwards we find related[p] the caſe of a young maſon, 16 years of age, who was bitten on the leg, and who took the diſeaſe on the 56th day. It appears that he had ſome ſlight indiſpoſition from the 44th. This author however has no opinion of mercury, in which I perfectly coincide with him.

17. *Memoir by M. Bonel de la Brageresſe.*[q]

This author gives an account of ſix perſons and five animals, viz. a dog, a cat, a bull, and two cows, bitten by a mad dog. The ſix perſons recovered, but the five animals died, from two to three weeks after the accident. The cows ſurvived four days after the diſeaſe appeared; the bull not altogether ſo long; the dog three days, and the cat 30 hours: and what was ſingular in this laſt, it never, during the diſeaſe, attempted to bite. The dog which committed theſe ravages had previouſly bitten four other perſons. They took no precaution to

[p] Vide part ii. p. 242. [q] Vide part ii. p. 255.

to prevent the diſeaſe, and three of them died.

The ſame author believes in the utility of mercury. He mentions a pig being bitten, which did not take the diſeaſe till the end of five weeks, a period longer than is uſual for quadrupeds. Another pig was bitten, and in the interim was killed and eaten, without any bad conſequences. He notices two other pigs that died in leſs than ſix weeks. This author is of opinion, that Hydrophobia has been cured, and cites Nugent's caſe of Elizabeth Bryant, and that by Wrightſon,[r] as proofs. In this he will not find every reader to coincide with him.

He relates the caſe of a boy between five and ſix years of age, who was bitten the 10th of July, 1777, and was attacked with the diſeaſe on the 9th of September, 1778; diſtant 14 months. Our author ſaw him on the 10th, 1778. He died in 55 hours from the attack.

A poor man, an ideot, bitten by the ſame dog, died in three weeks. More than ten animals became mad; ſome in two, ſome in three, four, five, and ſix days from the bite.

A cow

[r] Vide Tranſ. of Coll. of Phyſicians, Lond.

A cow died 36 days from the bite, and ſuckled its calf; and an infant took its milk, without any bad conſequence, till the day of its death.

M. Bonel likewiſe details the caſe of a maſon, aged 22, who was bitten in the leg and hand in 1777, and was attacked by the diſeaſe in the middle of July, 1778, eight months after the accident, and died in three days. What is worth notice in this caſe is, that his attendants received his *breath*, put their *fingers* into his *mouth* now full of ſaliva, and were even *ſcratched* by his nails, without any ill effects.

18. *A Memoir by M. Matthieu, Surgeon of Conze, near Linde, in Pèrigord.*[s]

This author does not admit of ſpontaneous Hydrophobia in man, and is of opinion that the caſes cited by Andry and others may be referred to other diſeaſes. In an inſtance given of it by Sauvages, M. Matthieu ſeems properly enough to refer it to paſſions of the mind, cauſed

[s] Vide part ii. page 295.

cauſed by inſult offered to the patient (a young woman) by a young man, which threw her into a violent fever and delirium, with a dread of water. The caſe that M. Pouteau relates he conſiders of the ſame nature. It was merely a caſe of mania, ſuddenly excited in a weak man, in conſequence of anger.

M. Matthieu ſeems properly to diſtinguiſh between Hydrophobia as *ſymptomatic*, and Hydrophobia as a *primary* diſeaſe. To the latter he gives the common name of *Hydrophobia*, which, by the French, is ſtyled *la rage*. He ſays that the diſeaſe ſometimes exiſts without the leaſt dread of water, of which he gives an inſtance in a boy of 13 or 14 years of age, in the Hotel Dieu, at Montpellier. The bite was given by a dog, and the wounds were ſpeedily cured, when he left the hoſpital, but returned in three weeks after with the diſeaſe. He was tranquil, and cheerful as in health, till the moment of the fits, which were violent, and which he foreſaw time enough to allow himſelf to be bound. He ſwallowed to the laſt moment, and without repugnance, whatever drink was offered to him. This author mentions a man of about 50 years of age, who likewiſe had the diſeaſe without any dread of water.

water. M. Matthieu *recommends* mercury, and cites ſeveral authorities in favour of it. He thinks it not only a prophylactic, but a cure, and produces a number of caſes to prove the truth of this poſition.

19. *A Diſſertation on Rabies, by D. Metzler.*[t]

This author is of opinion, that the diſeaſe can only ariſe from a wound inflicted by a rabid animal. He divides the diſeaſe in the dog into three ſtages. He ſays, among other ſymptoms, that in the firſt ſtage this animal refuſes both meat and drink.[u] In the ſecond ſtage that he loſes the recollection of his maſter. Metzler affirms, that he has even known a dog, who, at this period, did not *notice* the *diſcharge* of a gun: the dog, according to this author, now refuſes drink. At this time he runs forward; dogs fear, howl, and ſhun him. He bites indiſcriminately whatever comes

[t] Vide part ii. page 329.

[u] This has been fully diſproved in the preceding pages.

in his way. His third ſtage comprehends but few ſymptoms: exhauſted now, he can ſcarcely move; falls down, and dies convulſed.

Our author aſſerts the diſeaſe to be communicable only by the ſaliva; and in proof of this he relates a caſe which had lately happened where a woman in the eighth month of pregnancy was bitten on the little toe by a cat. After 21 days ſhe died hydrophobic. The phyſicians and ſurgeons, through *fear* of *infection*, declined giving their aid. The neighbouring ruſtics more humane, and with more reſolution, ſucceſsfully performed, with a common table knife, the Cæſarian operation, and eſcaped without infection. He is of opinion, that the beſt prophylactic conſiſts in deſtroying the poiſon in the part bitten by the actual cautery, in preference to the potential, or to exciſion. He reprobates all dependance upon internal medicines as prophylactics. The application of the actual cautery he urges by many arguments and proofs from authors ancient and modern.

In Germany it is in ſuch common uſe, that in the ſmiths ſhops inſtruments are kept of different ſhapes, for more commodiouſly burning the part. To theſe the people reſort when they

they ſuffer accidents from rabid dogs. So much do they rely on this practice, eſpecially when done by red-hot iron, that they keep a piece in form of a key for this purpoſe in many ſhops, which is held in great veneration, under the name of St. *Hubert*'s key. In our country, adds he, the prieſts do not ſuffer this key in common hands, but excluſively keep it in their own poſſeſſion, exerciſing this office with it, as occaſion requires, not without great emoluments, by which means the poorer people are excluded from its benefit.

Metzler relates the hiſtory of a woman named Mary Ann Proghammerin, 26 years of age, who on the 26th of December, 1782, was ſeverely bitten by a mad dog near the ankle. She returned home with as much expedition as her wound would permit; ſent for a ſurgeon, who waſhed and deeply ſcarified the part, and ſprinkled it full of cantharides, applying a plaiſter over the whole. Next morning the ſame proceſs was repeated with the addition of St. Huberts key made red hot. The wound was kept open for ſix weeks.

On February 24, or nearly two months from the accident, after conſiderable uneaſineſs occaſioned by the ſudden illneſs of one of her family,

family, ſhe felt a pain in the bitten parts, ſtretching towards her hip. This increaſed, and on the 26th ſhe was obliged to keep her bed. On the 28th deglutition became greatly impeded, accompanied by intenſe thirſt, and a troubleſome hawking of viſcid ſaliva. March the 1ſt her complaints increaſed; inability to ſwallow, with exceſſive thirſt followed, to mitigate which ſhe ſucked her huſband's fingers, previouſly moiſtened in cold water. In this way ſhe felt no horror at the ſight of liquids, though now unable to ſwallow either fluids or ſolids. She was greatly affected when any perſon approached her bed; it was attended not only with increaſed reſpiration, but almoſt inſtant ſuffocation. Her underſtanding remained perfect, ſhe wiſhed for a phyſician, and the ſame evening the author of this narrative was ſent for. Being ſeized with a violent exacerbation, ſhe repeatedly entreated her huſband to end her miſery by ſmothering her with the bed clothes, adding, that it was his intereſt not to refuſe her laſt prayer made with a view to preſerve *himſelf* from the *diſeaſe*, which otherwiſe he might receive from her.

The wretched huſband yielded, through the power of terror, and had nearly executed this

rath

raſh action when the doctor entered, who immediately liberated the dying woman, by removing the clothes in which ſhe was confined, opened the doors and windows, applied volatile alkali, ſprinkled her with cold water, and thus recovered her from ſuffocation. While the affrighted huſband related the reaſon of his attempting this deed her reaſon returned, and ſhe confirmed her huſband's words, and moſt earneſtly implored the doctor's aſſiſtance, more eſpecially as ſhe was in her third month of pregnancy. Her pulſe was unequal and tremulous; yet he ordered V. S. to 14 *ounces*, and he obſerved, that the blood had a *healthy appearance*. At the ſame time he adminiſtered four grains of tart. emet. in order to excite nauſea and vomiting. Although the doſe was repeated no vomiting took place. The cicatrices were now re-opened by deep ſcarifications, and filled with cantharides. An emollient clyſter was injected; a grain and a half of opium ordered to be given every two hours; the wounds to be filled with mercurial ointment, and the tepid bath to be uſed.

Four ſtout men, with two ſurgeons, were left to guard her, to whom proper *cautions* were

were given that they might avoid *infection*,[v] while the doctor returned home in the evening, to order the neceſſary medicines. She paſſed a reſtleſs night. No ſooner had ſhe entered the bath, but a violent exacerbation ſeized her, deglutition became totally impeded, difficulty of reſpiration increaſed, with fever, a parched tongue, and an accumulation of ſaliva, which ſhe ejected inceſſantly on the attendants. Frightened at this circumſtance they ſnatched her from the bath, and threw her into bed, retreating with precipitation to the different corners of the room. One of the ſtrongeſt, with more courage than the reſt, laid hold of, and bound her. The convulſions forced open the orifice in her arm, which none of them, through fear, attempted to bind. The profuſe hæmorrhagy ſoon haſtened her death.

In ſome additional obſervations which the author ſubjoins, we are informed, that in different parts of Germany no ſuperfluous number

[v] It will appear from this and other caſes collected how prevalent the erroneous and dangerous opinion concerning the capability of the human ſubject of propagating the diſeaſe ſtill continues, and to what horrid practice it leads.

ber of dogs are permitted to be kept, and even the number allowed pointed out; by this means accidents ſeldomer occur in theſe places. Their owners likewiſe are enjoined to muzzle them, thereby inſuring to the inhabitants a farther ſecurity.

This author places no confidence whatever in mercury as a ſpecific. On the contrary, he alludes to great variety of inſtances where it was liberally given, yet the patients died under the uſual ſymptoms. He brings forward ſeveral proofs of human ſaliva *not being infectious*. The hiſtory above where the huſband wetted his fingers that his wife might ſuck them, and his roping the tough ſaliva from her throat affords a ſtrong example. He teſtifies that both he and a ſurgeon were beſmeared with the blood and ſaliva of a hydrophobic without the ſmalleſt bad conſequences. Neither the huſband who ſlept with his wife in the ordinary familiarities of that ſituation, nor thoſe who attended during the diſeaſe, tho' copiouſly beſmeared with ſaliva, in another caſe of Hydrophobia were affected.

A mad dog ruſhed on a flock of oxen, bit ten of them, and in three days they took the diſeaſe, ran about conſtantly lowing, ſuffering under

under dreadful convulſions, and every one periſhed. Some other oxen which eſcaped the bite continued in the ſame ſtalls with the infected uninjured. Another example of the ſame kind lately happened where an ox was bitten by a mad dog, and took the diſeaſe; the animal remained in the ſame ſtable with others without communicating infection; neither did the owner ſuffer though he frequently thruſt his hand into its mouth in adminiſtering remedies. Thoſe phyſicians therefore, who, through a miſtaken notion of the infectious nature of Hydrophobia in the human ſubject, carefully enjoin the family where ſuch misfortune has happened to burn the furniture of the room, add only one loſs to another by their erroneous admonitions. Metzler aſks, and with great propriety, whether thoſe authors who affirm the communication of the infection by contact, as kiſſing, &c. be certain of the fact?[w] He anſwers in the negative. Facts ſtand unqueſtionable in direct contradiction. The

[w] Cœlius Aurelianus, Aretæus, Palmarius, Schenkius, Mathiolus, Pierius Valenianus, Mathæus de Gradibus, Meiſchnerus, Surius, Salius, Hildanus, and Baccius, all hold this opinion.

The ſting of a bee or the wound made by the beak of a duck has occaſionally produced death. What then? Muſt we conclude, ſays he, that every ſting from a bee, or every ſcratch from the beak of a duck will equally prove deadly? Hydrophobia therefore does not infect either by ſweat, contact, blood, urine, nor even ſaliva, unleſs through the intervention of a wound; for we have innumerable examples where domeſtic animals have died rabid, and have been eaten without the leaſt bad conſequence. This author affirms, that the ſaliva of a dead rabid dog becomes equally innocent. An opinion which, as far as it concerns this genus, ought to be received with heſitation.

To Dr. R. HAMILTON,

DEAR SIR,

AS your work on Hydrophobia embodies the facts of modern times, and many of thoſe deſcribed by ancient writers, I am for contributing my mite towards enabling the curious reader to refer to ſeveral other ancient writers, where caſes of Hydrophobia are to be met with. In addition to Ætius, Cœlius Aurelianus, Celſus, Hildanus, and many other authors whom you have mentioned, I ſend you the following liſt of works with their dates.

Remberti Dodonœi Obſervationes. Herdervici, 1621.

Tulpii Obſervationes. Amſtelodami, 1641.

Pauli Renealmi Obſervationes. Pariſiis, 1604.

Zacutus de Principium Medicorum Hiſtoria. Lugduni, 1641.

Amati Luſitani Centuriæ, 1557.

Obſervationes Joanni Chiffletii. Pariſiis, 1712.

Decades Diſputationum Jon. Jacobi Genathii. Baſil, 1621.

Some

Some of theſe are included in the Obſervationes Medicæ Rariores, Joannis Schenckii. Lugduni, 1644, a work which contains quotations from upwards of 60 authors on Hydrophobia, more than I have mentioned, or are noticed in your volumes, and of which the following are the principal:

Miraldus Memorabil.
Cardanus
Scaliger.
Cluſius Annotation Gariæ Aromat. Hiſt.
Pareus.
Nicolus.
Plutarch.
Strabo.
Heroditus.
Diodorus.
Foreſtus.
Rumbaum ad Scoltzium.
Wierus.
Fernelius.
Capivaccius.
Fracaſtorius.
Aretæus.
Wolp.
Joam. Mathiol. de Grad.
Galen.

Mathiolus

Mathiolus Commentar. ad lib. 6, Dioſcoridis.
Joan. Pierius Valenianus.
Palmarius.
Surius.
Salius.
Alexand. Benedictus.
Iſaius Meiſchſnerus.
Niphus.
Albertus Magnus.
Amatus Lautonus.
Avenzour Theizir.
Valleriola.
Vidius.
Petr. Salius.
Mercellus Donatus
Alzaharavius.
Avicenna.
Nicolaus Florentinus.
Jac. Greviorus.
Thom. a Veiga Comment.
Geſnerus Hiſtor. Anamal.
Ferdinandus Ponzettus.
Raſis.
Geſnerus Epiſtol. ad Coſſnam Holzachium.
Auratione D. Georgii Palmæ.
Dioſcorides.
Aëtius.

Aëtius.
Philoſtratus in vita Appollonii Tyanei.
Plinius Nat. Hiſt.
Aquivius.
Gemma Coſmerit.
Cœlius Rhodiginus.
Joan. Jovian. Pontanus.
Scribonius Largus.
Alexandrinus.

Your's very truly,

THOMAS GIRDLESTONE.

July 12, 1798.

To the above may be added the following. I copy them as preſented to me in Foot's Eſſay.[x] To give a complete liſt of every author on the ſubject might be deſirable, as well as uſeful, but it would be a labour not only difficult for me to execute, but even, in my ſituation impracticable. Theſe however, and ſuch as are quoted in different parts of this work, will be found the moſt uſeful in conducting the inquirer or ſtudent in his reſearches.

Cata-

[x] On Bite of Mad Dog, page 85.

Catalogue of Authors on the Hydrophobia, in Portal's Tableau Chronol. p. 824, tom. 7, and taken by him from Draudius's Biblia Claſſica.

Bravius, 1551. Salmanicæ.
Mercurialis Hieronymus, 1580. Bataviæ.
Baccius And. 1586. Romæ.
Variſmannus, 1586.
Mancinellus Aſcanius, 1587. Venet.
Abbatius, 1589.
Bauhin, 1590, 1591. Montbelliard.
Roſcius, 1606. Baſil.
Caiſſon, 1609. Aix.
Codronchius, 1610.
Sprachman, 1613. Lond.
Caiſſan, 1616. Paris.
Humel, in 8vo. Catalogue du Burette.
Caranta, 1623. Saviliani.
Aromatarus, 1625. Venet.
Bonaventura, 1627.
Stegel, 1640.
Severinus, 1643. Bataviæ.
Gockelius, 1679. Augſburg.
Loſſius, 1682.
Ettmuller, 1685.

Albinus,

Albinus, 1687.
Wedel, 1695.
Eyſelius, 1705.
Fetzer, 1733.
Schulze, 1740.
Olivier, 1743.
Boemar, 1745.
Sauvage, 1749.
Gallarati in Milano.

To the above I ſhall add another, Obſervations on the Effects of Mephitic Vapours upon the human Body, on drowned Perſons, on ſtill-born Children, and on *Canine Madneſs*, &c. by M. Portal, Profeſſor of Anatomy, &c. edit. 6. Paris, 1787.

POST-

POSTCRIPT.[y]

Dr. Babington's ſecond patient, William Yates, a young man, bitten by a yard dog in both hands, the 30th of Aug. 1784.[z]

This happened not far from Guy's Hoſpital. The patient was brought to it. It is worthy of remark, that the patient was in the daily habit of feeding the dog, and of familiarity with him, and never obſerved him in the leaſt indiſpoſed till the moment he received the bite. The wounds were extremely ſlight.

Pro-

y In order to give the reader a view of the lateſt publiſhed caſes, I ſtopped the preſs till I ſent to town for the work in which the two following are detailed, and which did not come to my knowledge in time for their inſertion in their proper place, among the epitomiſed caſes. The work has but juſt made its appearance.

z Vide Med. Records and Reſearches, ſelected from the papers of a private Medical Aſſociation. p. 117. Lond. 1798.

Prophylactic. Ormſkirk medicine exhibited in the uſual way.

Symptoms. Friday, October 15, *chilly* and uncomfortable; pain in right arm and ſhoulder, but uncertain whether firſt felt before or after chill. Saturday. Drooping, and low ſpirited. Sunday. Much as the day before. Monday. Scarcely able to work. Tueſday Morning. Ate little breakfaſt; quitted his dinner; took no ſupper; paſſed this night reſtleſs. Wedneſday, half after four, P. M. brought to hoſpital; put to bed, where Dr. B. viſited him, and found face rather fluſhed; looks were wild, yet he was perfectly rational. Speech interrupted by ſudden convulſive ſighs. "He was ſo particularly ſuſceptible of cold air, that it was with much reluctance he ſuffered us to feel his pulſe." Averſion to drinking; ſaid it gave him pain to ſwallow, yet confeſſed he was thirſty. Pulſe full, rather frequent. 7, P. M. Pulſe 92: convulſions on attempting to drink. Thurſday. 1, A. M. Outrageous; talked of the dog; ſung;[a] ſpat

a This ſymptom was doubtleſs the conſequence of the opium. Such has never been mentioned in any caſe of the diſeaſe, which I have peruſed, as a genuine ſymptom.

frequently, and to a great diſtance, but ſhewed no diſpoſition whatever to be miſchievous." 4, A. M. More compoſed; ejecting from the ſtomach quantities of a chocolate-coloured liquor: frothy ſaliva in great abundance in mouth; eyes fixed, of a livid red colour; mouth open; countenance fluſhed; reſpiration ſlow, laborious; pulſe ſcarcely perceptible. 7, A. M. Death.

Treatment. Wedneſday. 4, P. M. Warm bath for 25 minutes on coming to hoſpital; could bear it no longer: on riſing from bath convulſive fit; ſunk inſtantly to bottom of bath, and would have been ſuffocated, but for aſſiſtance at that moment given. Let blood to 14 ounces directly after bath; no appearance of inflammation, nor buffy coat on ſurface after coagulation. Mercurial friction to two ounces of unguent on legs and thighs: five

tom. Melancholy and timidity mark the complaint. I have repeatedly obſerved the ſame proneneſs to ſinging from large and reiterated doſes of opium. The ſongs however are of a melodiouſly plaintive kind, and peculiarly diſtreſſing to a ſympathyſing and commiſerating byſtander. Theſe inſtances were fever, and the practice was Brunonian. I remember no recovery. They took place in the ſummer 1781, when opium firſt began to be largely exhibited. I ſaw ſome of them in the army.

five grains of ſtrained opium in bolus; ſoon after another doſe of 25 grains: bliſter to breaſt. 7, P. M. Repeated opium to 30 grains, with 10 grains of calomel. 10, P. M. Same quantity of opium without calomel. A quarter paſt 11, P. M. No effect from opium; ſame doſe repeated. Thurſday. 1, A. M. Same quantity again repeated. "Soon after this he became outrageous; talked of the dog; ſung; toſſed himſelf from ſide to ſide with great violence." 3, A. M. Same quantity again repeated. Total opium in eleven hours no leſs than 180 grains, without benefit, and without ſleep.[b]

Diſſection. Veſſels of D. and P. mater unuſually diſtended with blood, but not to an extreme degree. Between D. and P. mater, and between proceſſes or folds of former, a little fluid, appearing to have ſome conſiſtency.

Lungs----Turgid with blood particularly right ſide.[c]

Liver

[b] This trial is a full confirmation of what was advanced at p. 71.

[c] This turgeſcence is not to be attributed to active inflammation, but to congeſtion or infarction from irregular ſpaſmodic action in the heart, &c. (Vol. 1, p. 246) becauſe

Liver----Superior convex part of great lobe of a ſhining blue: gall bladder full of bile.

Small inteſtines------External ſurfaces appeared ſlightly inflamed.

Trachea----Membrane lining its internal ſurface unuſually red.

No rupture of veſſels any where; no deficiencies, nor preternatural quantities of fluid in any cavity.

Stomach----Sound. Heart ſound.

Diaphragm without inflammation: other muſcles of reſpiration without inflammation.

Axilla----No enlargement of glands. All other parts natural.

It is to be regretted, that the diſtance between death and the diſſection has not been noticed. This omiſſion is material.

Dr. Wavell's patient, Robert Pick, 23 years of age, bitten by a ſpaniel in the right hand, on the 6th of April, 1795.[d]

This

becauſe the blood would otherwiſe have ſhown, on coagulation, the common inflammatory appearances. Inſtead of this it was healthy, and without the buffy cruſt.

[d] Vide Med. Records and Reſearches, ſelected from the papers of a private Medical Aſſociation. p. 139. Lond. 1798.

This happened at Barnſtaple in Devonſhire. The dog belonged to the family. He lapped water afterwards; hence was not conſidered as mad.

Prophylactic. Nothing done to the wound; no ſuſpicion entertained.

Symptoms. June 8. Remained well till ten, P. M. this evening: cold ſhivering, like what he had formerly experienced from ague: night paſſed without ſleep; could not ſwallow. 9th. Could not ſwallow at breakfaſt, yet entertained no ſuſpicion of Hydrophobia, but added, that he would have thought his caſe Hydrophobia had he not ſeen the dog afterwards repeatedly drink water. This morning was melancholy, dejected; countenance appeared diſtreſſed; informed Dr. W. that four days ago he firſt felt numbneſs, with pricking ſenſation in right arm, extending to ſhoulder: ſenſation increaſed ſince he played at fives, a game he lately exerciſed himſelf in, and was much heated.[e] Complained alſo of ſwel-

[e] On examining caſes the firſt attack will appear frequently to occur, after violent exerciſe of any kind, or after grief, or agitation of mind. Smith (Caſe VI.) took the diſeaſe after a camping match. M. Proghammerin

ſwelling in throat preventing deglutition: attempted to ſwallow; followed by convulſions: vomited this morning conſiderably a viſcid greeniſh phlegm.

Bowels natural; urine copious and natural; pulſe 108: tongue red in middle, with ſides moiſt and florid: no inflammation in tonſils or fauces. 4, P. M. Pulſe 120, and ſmall: very deaf; thirſt great. 10th, at 8, A. M. Laſt night

hammerin (page 531) took it after ſuffering ſome family vexation, and in the preſent inſtance it was the conſequence of *active* agility. The boy Brown (Caſe XLI.) fell ill after violent play, and ſo have others. To explain this, I would ſay, that the *quieſcent* time peculiar to the poiſon being nearly completed, the violent agitation affects the circulating maſs in general, inducing a change of action, giving acuter ſenſibility to every veſſel by which the action of the abſorbents, in common with others, are changed. The noxious particles, till now apparently at reſt, are laid hold of more readily, and conveyed to the heart, diſturbing its functions. This violent agitation of mind or body, or both, occurring near the time of *acceſſion*, according to the general law of the poiſon, only haſtens the diſeaſe a day or two or ſo, but is no other way connected with the complaint. I infer this from the many inſtances recorded, where agitations equally ſtrong, at a greater diſtance from the common time of the appearance of the diſeaſe, have had no effect: hair-breadth eſcapes from death by ſhip-wreck, the operation of lithotomy, violent catarrhal affections happening after the bite, but more diſtant from the *ſpecific* period, did not induce it: when this time arrived they took the diſeaſe and died.

night ſleepleſs; ſenſibility to cold air extreme; opening a door or window created a ſenſe of ſuffocation: every ſymptom increaſed: pulſe much quicker and weaker; tongue dry: ſpaſms increaſing on the leaſt motion, on perſons entering the room, or approaching towards him. Any one's hand coming near, ſuch as by adjuſting his night cap, &c. gave inexpreſſible uneaſineſs. 3, P. M. Every thing worſe; refuſed to make another effort to ſwallow, declaring that the laſt time he ſwallowed a bit of bread it produced "ſo dreadful a ſenſation in his throat, extending from his jaws to his ſtomach, that to attempt it again would occaſion his death." Deafneſs ſo great, that the noiſe of a carpenter's hammer in the next room did not affect him: adviſed to change his chamber for a larger; dreaded the cold air in removing though only ten feet of gallery to croſs, ſaying it would kill him: motion of the air from making his bed affected him, inducing ſpaſms; lifting him up in a chair produced the ſame; for on moving it "he ſprang up, and with a loud ſhriek flew to the other end of the room, with a violence, wildneſs, and agitation not to be deſcribed." Motion of duſt in the room diſtreſſed him, trying with

with his hands to puſh it away: every thing progreſſively worſe; eye red; wildneſs and horror in aſpect ſcarcely to be conceived; pulſe quick, tremulous, hardly to be felt: ſaliva copious; conſtant ſpitting; could not bear a handkerchief to wipe his face: ſaliva adhering about mouth; "at times indeed, though evidently with great reluctance, he drew the phlegm from his mouth with his fingers, and with a motion rapid as thought, and a vehemence to be conceived by thoſe only who have ſeen ſimilar inſtances, he threw it againſt the wall." Vomiting of bilious matter recurred, ſinking apace: called now for a glaſs of brandy; took it in his hand with eagerneſs; "ejaculated a bleſſing on his maſter and miſtreſs, threw the brandy into his mouth, and ſwallowed it at one gulp, as if forcing it down with every poſſible violence, and inſtantly fell back dead in the chair."

Treatment. Four grains opium in pill, to be repeated every hour; bliſter to throat; laxative enema producing two ſtools; bliſters behind the ears at patient's requeſt; enema repeated, with opium in it ten grains. No eaſe from opium; 54 grains taken in the laſt 25 hours, beſides the opiate clyſters.

Diſſec-

Diſſection----None made.

N. B. Rational throughout; nor did he conſider his diſeaſe as Hydrophobia; and hence his ſufferings were the genuine effects of the poiſon.

The dog who bit this patient appeared diſeaſed for two or three days after, and *did*, it ſeems, *refuſe* food at this time, though not water; was ſnappiſh and irraſcible; attacked other dogs, who fought with him freely. After having bitten the patient, ran away; was loſt for a day and half: during this killed ſeveral lambs; was obſerved to eat part of one: was ſecured by a neighbouring farmer, and brought back; then confined. Water now offered him; ran to it, lapped with eagerneſs and apparent eaſe, continuing to do ſo when he was laſt ſeen. Died early next morning. Meat was thrown to him before death; ſeized it greedily but did not eat; attempted to hide it in the ſtraw.

A communication by Mr. A. Cooper, ſurgeon, to Dr. Babington,[f] leads us to doubt whether

[f] Vide Med. Records and Reſearches, &c. page 136.

whether the ſaliva of a dead rabid dog can induce the complaint. In the inſtances which he tried it failed. Metzler[g] was of opinion, that no diſeaſe would follow from inoculation with ſaliva from a dead rabid dog, but he adduces no examples in proof. Mr. C. made his experiments with care, and they failed; yet till they be oftener repeated I am unwilling to decide in ſo hazardous an affair reſpecting its innocence. This is not meant to deter from diſſections of rabid dogs; it is intended as a caution merely for the diſſector or others, in handling ſuch ſaliva. Should my doubts be even ill founded, they can do no harm.

Mr. C. inſerted two or three drops of ſaliva, in its recent ſtate, taken ſoon after the death of a rabid dog, from the point of a lancet under the ſkin of the inner part of the thigh of a dog, a pig, a fowl, and a rabbit. "The dog and fowl were kept confined for nine weeks, and the pig ſeven, but without any appearance of Hydrophobia." Twelve months afterwards the dog was in good health. Nothing could be concluded concerning the rabbit; it

[g] Vide page 537.

it was accidentally killed four days after the experiment.

Another proof is afforded here of what has been already delivered,[h] that the diſtance from the bite to the attack in the dog tribe is regular, and has its law. The dog from which theſe experiments were made, began to droop on the 25th day from the bite, and died on the 30th. He was tied up immediately after being bitten, which was by a ſtrange dog, who ran off, and was never heard of more. This was in Auguſt, 1788.

The appearances on diſſection obſerved by Mr. Cooper were, an inflammation of the internal membrane of the ſtomach,[i] with ſeveral ſmall clots of blood effuſed both within the ſtomach, and in the cellular ſubſtance, connecting the mucous coat to the muſcular. A large circular ſpot of inflammation was diſcovered in the pharynx. Mr. C. has met with the ſame appearances in ſeveral other dogs; hence the concluſion formerly drawn is ſtrengthened, that the ſtomach, as well in the canine as the human tribe is much connected with

h Vide vol. 1, page 23 and 222.

i Vide vol. 1, p. 28 and 224 for ſimilar appearances.

with, if not the principal ſeat of the diſeaſe. Mr. C. has omitted to mention the ſtate of the heart, great veſſels, and lungs.

END OF VOL. II.

ANNOTATIONS.

Vol. I. *page* 33, *line* 2 *from bottom.*

"I ſhall mention as the next," &c. Nugent ſeems to have entertained the idea of local irritation, and nervous affection. The ſtimulus of the poiſon, he thinks, impreſſes a new morbid affection on the ſolids of the part bitten, and is thence propagated to the ſyſtem;[y] but he loſes himſelf in a theory in proceeding in his explanation, not neceſſary to be here examined, as it is founded on miſtaken notions of the animal œconomy.

Mead, previous to this, entertained an idea not diſſimilar. He could not reconcile the ſpeedineſs with which the poiſons of ſome noxious

[y] Vide Eſſay on Hydrophobia, p. 127, Lond. 1753.

noxious animals acted with the notion of the blood being primarily affected. The courſe of circulation, he thought, being too ſlow, he referred it therefore to the nerves.

Vol. I. *page* 111, *line* 3 *from bottom.*

Dr. Clarke[z] divides this diſeaſe into two ſpecies, one he denominates idiopathic, the other ſymptomatic. The former admits of a cure; the latter, he thinks, cannot be cured. It ariſes from a leiſon of nerves and tendons, occaſioned by wounds of various kinds, ſuch as pricks in the feet from nails, or fiſh bones; ſplinters of hard wood running into the feet and hands; from cuts of glaſs bottles in the ſoles of the feet, or about the toes; from pricks of ſwords; gun-ſhot wounds in the extremities, eſpecially about the feet and ankles; from compound fractures with ſplintered bones; from amputations of the arms, legs, fingers, and toes.

During the ſpaſms the patient experiences conſiderable difficulty of deglutition, but feels no averſion to fluids as in Hydrophobia. The diſeaſe

[z] Vide Treatiſe on the Yellow Fever, page 129.

diſeaſe never appears after the 14th day from the injury; the 8th or 9th, or the 13th and 14th the moſt common time. The punctures or cuts are generally healed before the diſeaſe appears, and when it proceeds from an amputation the ſtump in general looks well till this time.

In England however we are more ſucceſsful than Dr. Clarke has been in Dominica; for this ſpecies occaſionally admits of a cure. Dr. Currie cured it in one inſtance at Liverpool,[a] by bark and wine, imitating the pratice of Dr. Ruſh. That diſeaſe aroſe from a wound in the hand; it was nearly healed (the diſtance from the time of receiving not mentioned) when the rigidity of the jaw took place. Deglutition was extremely impeded; and convulſions followed not only the attempt to ſwallow, but the ſight of fluids. Perſeverance, and watching a favourable moment when the relaxation leſſened overcame the difficulty, and ſufficient wine was gradually ſwallowed. The ſimiliarity of this ſymptom to Hydrophobia could not fail to ſtrike Dr. C. He mentioned it to Dr. Percival, who noticed it in his paper after-

[a] Vide Med. Reports, &c. edit. 1, App. No. 1, p. 9.

afterwards publiſhed on this malady.[b] Notwithſtanding this ſimilarity in one ſymptom it cannot eſtabliſh a ſimilitude of diſeaſe. They are as different in many material ſymptoms as they differ in origin.

Vol. I. *page* 159, *line* 4 *from bottom.*

"Scribonius Largus." This practitioner, who lived under Claudius, was in poſſeſſion of a famous noſtrum for Hydrophobia. He received it from his maſter, Apuleius Celſus. The compoſition was hot ſpices and opium. Cicily was in thoſe times notorious for mad dogs, and Apuleius Celſus, the real author of the compoſition, uſed annually to diſpoſe of quantities of it in this iſland.

Ibid, line 3 *from bottom.*

"Palmarius." The famous noſtrum which goes by this practitioner's name, was extolled by him above all others which induſtry had heaped together, and credulity received. It was compoſed of the leaves of twelve plants, viz.

[b] Vide Eſſays, vol. 2, page 366, edit. 4.

viz. rue, vervain, ſage of virtue, plantain, polypody, common wormwood, mint, mug-wort, baum, betony, St. John's wort, and of the leſſer centaury. Equal parts of each were reduced into powder, and mixed together. The doſe was a dram daily; but when late in application, either for prophylactic or cure, it might be employed in double or treble the quantity. It was equally ſucceſsful as a prophylactic and a cure.

No caſe of diſeaſe, according to him, could reſiſt its virtues, two only excepted: the one where the injury had been received in any part of the head or face above the mouth; the other where the wound, previous to its application, had been waſhed with cold water.

Palmarius however was not the inventor of this, though it goes by his name: he received it from James Sylvanus, Count de Pyrou.

Ibid, page 160, *line* 4.

"Pimpinella." It was one of King Henry the ſecond's foreſters (game-keepers) who on his death-bed diſcovered it to his phyſician Fernelius; not King Henry himſelf. The hiſtory of this noted ſpecific is given us by Pal-

marius, who received it from Fernelius who was his preceptor. It was to be eaten as a ſallad.

Vol. I. *page* 228, *line* 6 *from bottom.*

" No ſerious evil followed." The late Mr. J. Hunter affords a complete refutation of this ill-founded opinion. He wounded his hand while diſſecting a patient who died of Hydrophobia. It is well known he lived long after without experiencing the diſeaſe, and died of a very different complaint.[c]

Vol. I. *page* 250, *line* 7.

" Create the higheſt alarm." The late J. Hunter felt with ſeverity the effect of apprehenſion of rabid infection. He imagined, with many others, the poſſibility of communication of rabid virus from man to man. In diſſecting a perſon who died of this diſeaſe, he cut his finger, and the impreſſion wrought ſo forcibly on his mind, of the poſſibility of being infected through

[c] Vide Home's Life of J. Hunter, prefixed to his poſthumous works, page 53.

through the wound, that it brought on a violent fit of that complaint, which, ſome years afterwards, cut ſhort his valuable life.[d]

Vol. I. *page* 280, *line* 18.

According to Plenck ſaliva is inſpiſſated by a ſmall quantity of mineral acids; but by a large quantity it is diſſolved.[e] He likewiſe affirms it to be diſſolved by aerated alkali. He does not ſay how he came by this concluſion, or whether it is drawn from human ſaliva, or from ſaliva in general.

It does not altogether accord with the experiments of M. Hapel on the ſaliva of the horſe; for not aerated, but cauſtic alkali is aſſerted by him to diſſolve this fluid. Neither does Plenck ſay whether his experiments were made on pure ſaliva, as flowing from the gland, or ſaliva collected after mixing with mucus from the membranes of the mouth and fauces.

From what follows it would appear to be the latter, becauſe he expreſſly affirms volatile alkali

[d] Vide Home's Life of J. Hunter, prefixed to his poſthumous works, page 53.

[e] Vide Hygrology, page 71.

alkali to be diſcovered by mixing the ſaliva either with cauſtic alkali, or with lime. Hapel, on the other hand, denies the preſence of volatile alkali in pure ſaliva, though by its colour, and its effects on acids, mineral alkali is evidently detected. Plenck ſays that ſaliva readily putrifies in warm air.

With reſpect to putrefaction of ſaliva M. Hapel's experiments coincided with Pringle's. The former found it to reſiſt putrefaction for ſeveral weeks, placed in an air pump in pure air; but at length it yielded to the ſeptic proceſs. Plenck draws the ſame inference. The conſtituent parts of ſaliva, according to him, are water, albumen, ammoniacal ſalt, and animal earth. Hapel again affirms it to be a mucilaginous watery fluid, which is formed of a proportion of air, oil, and water, of the fixed mineral alkali, and of animal earth, or earth of bones.

Hapel found pure ſaliva lighter than diſtilled water, for it ſwimmed in it. The ſpecific gravity of the ſaliva uſed by Plenck was heavier than water. Diſtilled water not being mentioned leads to the concluſion, that it was heavier than water without diſtillation.

The

The different results of these philosophers might proceed from the difference in saliva employed; the one using *pure*, the other saliva *mixed* with the mucus of the mouth. Saliva, says Plenck, corrodes copper and iron. Does not this argue the existence of oxygene? Does this oxygene proceed from atmospherical air mixed with the saliva of the mouth?

Vol. I. *page* 80, *line* 23. "Referable to the nerves"-----*Ibid, p.* 84, *line* 11. "Exerts its violence on the nerves"-----Vol. II. *p.* 1, *line* 11. "Seated principally in the nervous system."

I have brought these three passages together to draw the reader's attention to the symptoms which have in general been termed *nervous*. I have followed here the commonly received pathology; but may it not be asked with some propriety, how far the *blood* is concerned in producing these symptoms, and what share the heart and arterial system have in giving rise to them.

Some light I think is thrown on this subject by comparing the symptoms in the case of a late

late eminent anatomiſt[f] with the diſſection. Theſe would have been ſtyled nervous, and the nerves would have been denominated the chief ſeat of the diſeaſe, had not the inſpection led to a different concluſion. Who would not have affirmed the rotatory motion, falſe perception, and other illuſions, the increaſed ſenſe of taſte, hearing, and alteration in viſion, whether in dimneſs during the exacerbation, or change of colour in luminous bodies, during convaleſcence, to be referable to the nerves alone, without looking farther for a cauſe? The accurate hiſtory given by Mr. Home of this complaint, compared with the diſſection, clearly ſhows the primary cauſe to be referable to organic changes in the heart and arteries. Partial diſtribution of the blood, and changes ariſing from thence, produced what followed during a fit. The affection of the nerves was doubtleſs ſecondary only. What the real ſtate of theſe organs was when the firſt fit came on, which was from vexation of mind, cannot be told, but it is probable, that as happens in diſeaſes where the ſtructure of parts is deranged, the ſtructure

[f] Vide Home's Life of J. Hunter, prefixed to his poſthumous works,

ture had already felt ſome injury, though too ſmall to give uneaſineſs, till, by an inordinate action or exertion in the heart, or by a ſudden and temporary loſs of power to perform its functions, the injury became manifeſt. We ſpeak of terror, &c. acting on the nervous ſyſtem: is it not from the *ſanguiferous* that the effects ariſe? Change ſuddenly the current of the blood, and you produce thoſe ſymptoms called, in common language, *nervous*.

I throw out this hint merely as expreſſive of my doubts, whether we are correct in our pathology in referring ſuch ſymptoms *always* to the nerves. We ſwallow opium or hemlock, or drink ſome laurel water; ſymptoms ariſe bearing ſome ſimilarity to each other, and we refer them immediately to the nerves: but do not theſe ſubſtances enter the blood by the medium of abſorption? and do we not know from experiments[g] how ſmall a particle of noxious matter entering the blood will produce moſt violent effects? Here I would ſay, purſuing the idea of the above anatomiſt, that the life of the blood is inſtantaneouſly attacked and ſuffers, the moving fibres become thence affected,

[g] Vide Fontana on Poiſons.

fected, the heart is convulſed, and ſymptoms, receiving the name of nervous, ſpeedily follow.

The nerves are a part of the ſyſtem, like all other parts, formed from the blood; they conſtantly receive their ſupply from this parent fluid: whatever that emanation may be, called nervous fluid, it muſt in ſome meaſure be connected with the blood, being a branch only from the ſtock. Deny parts of their due proportion, or diminiſh the blood in them, the nerves feel the deficiency, and their functions become deranged. This may take place inſtantaneouſly from a ſudden deficiency, or gradually by the ſlow advancement of a chronic diſeaſe, ſuch as oſſifications about the valves of the heart, and other impeding cauſes of circulation: oſſification in the brain, or ſchirroſities therein. How will this apply in Hydrophobia? It will refer us to the fluids as a primary, to the ſolids only as a ſecondary cauſe, in tracing this complaint to its origin, and eſtabliſhing a juſt pathology.

Vol. II. *page* 3, *line* 4.

"Diſeaſe divides itſelf into two ſtages." Dr. Baumgarten[h] chooſes to divide the diſeaſe into two ſtages, but adopts very different periods from what I judge neceſſary. His firſt commences with the inſertion of the virus, and ends with the commencement of the diſeaſe: his ſecond, commencing here, ends with death. This indeed is an obvious diviſion, but it tends to nothing uſeful, unleſs he had pointed out practical inferences, which he meant to convey by this diſtinction. He does indeed adviſe the deſtruction of the part bitten, but he does not ſeem to think it would be ſucceſsful at any time throughout the firſt ſtage. This, if ſupported with proper proofs, would have been uſeful. All other prophylactics could avail nothing, howſoever diligently and attentively they might be proſecuted. This defect I have attempted to ſupply, and endeavoured, by examples to prove the utility of this practice, even at the commencement of the diſeaſe.

By

[h] Vide Med. Comment. D. ii. vol. 4.

By dividing the diſeaſe itſelf into two *ſtages* the practitioner is enabled to form at leaſt a more certain prognoſtic; and it is to the firſt part of this diviſion I would more eſpecially direct his attention. It does not appear to me impoſſible to arreſt the diſeaſe during this period; but the practitioner muſt be quick in his determinations, and rapid in his execution. When Hydrophobia, or what I call the ſecond ſtage begins, I perfectly agree with Dr. B.'s concluſion, that no cure has been performed, and I fear no cure can be performed.

Vol. II. *page* 28, *line* 19.

Since this ſheet was printed I have peruſed Dr. Ferriar's Obſervations on a ſecond caſe of Hydrophobia.[i] He inclines now to the doctrine of inflammation, conſidering the diſeaſe as bearing ſome analogy to peripneumonia. The diſſection, in this caſe, he thinks, warrants the inference. The fluidity of the blood in this and other caſes recorded, is referred by him to the ſame cauſe: hence V. S. bliſters, with

[i] Vide Hiſt. and Reflections, vol. 3.

with mercury and opium preſent themſelves, he thinks, as proper remedies.

Blood drawn from patients under active inflammation is more fluid indeed, and longer of coagulating than blood in a different condition; yet at length it does coagulate, and its texture is increaſed in firmneſs. Does it follow, that blood remaining fluid for 20 or 30 hours, or even for ſome days after death, muſt be inflammatory blood, and that the diſeaſe of the deceaſed was inflammatory? We are ſcarcely, I apprehend, warranted to draw this concluſion.

The diſſection of a late eminent anatomiſt[k] evidently ſhows the fluidity of blood from cauſes very different from inflammation. The hiſtory of this important caſe proved the diſeaſe to proceed from organic affections of the heart and its appendages. How far the blood might be altered from its healthy compoſition by interruptions to free circulation, I do not pretend to determine; but its fluidity would argue change. A review of that diſſection, compared with the hiſtory of ſymptoms, will ſhow ſeveral

k Vide Home's Life of J. Hunter, prefixed to his poſthumous works, page 62.

ſeveral of the moſt important of them to be very analogous to thoſe in Hydrophobia.

Hydro-carbonate gas poſſeſſes the property of keeping blood fluid[l] even after death. By this gas diſeaſes of debility, not thoſe of inflammation, are produced. Flaccidity of the heart follows from inhaling it.[m] Blood is kept fluid by alkalies. Both ammonia and ſoda are preſent in the blood. An increaſe in their proportion may conduce to its fluidity.[n]

This appearance rather ſerves to point out the exceſs of hydro-carbonate in the blood, and a deficiency in the oxygene neceſſary for health. When the latter *abounds* we have heat, and greater *tendency* to inflammation: when it *ſuper-abounds* it *induces* inflammation. Under this condition both the proportion of ammoniac and hydro-carbonate, perhaps alſo that of ſoda, are leſſened. An inflamed eye is followed by an intolerance of light, but it differs widely from that intolerance to light, to white or to bright red, and tranſparent bodies, experienced in Hydrophobia. No ſhrinking from the contact of cold air preſents in pneumonia, but it preſents in ſome diſeaſes of

[l] Vide vol. 2, p. 86. [m] Ibid, p. 87. [n] Ibid, p. 94.

of an oppoſite kind; it is preſent in diſeaſes of debility.

Narcotics have produced this ſenſibility to cold air; ſo do ſome poiſons. Inanition alſo has been productive of it. In the laſt days of a perſon who died from hunger, the increaſed acuteneſs of touch and viſion were manifeſt.*

Are not theſe ſymptoms marks of debility, whether occurring in Hydrophobia, or under inanition? Do ſuch ſymptoms ariſe in pneumonic inflammation?

In the caſe of Mr. J. Hunter, the ſenſations are morbidly acute, ſight, ſmell, hearing, taſte all are affected in an extreme degree; yet nothing bearing a ſimilitude to inflammation can be attributed to the diſeaſe. After the fit, wherein theſe and other ſymptoms were felt, had continued an hour or two, they would gradually yield, and the ordinary functions return. The illuſions experienced here evince how much depends on the regular motion of the heart and blood, and how many nervous ſymptoms may be referred to its anomalous diſtribution. This caſe explains ſeveral of the appearances in hydrophobia. The nerves

* Vide Currie's Med. Reports, &c. edit. 1, p. 234.

nerves indeed ſuffer yet not in a primary, but in a ſecondary manner.

A fever of a very malignant kind neither ariſing from contagion, nor propogated to others has been obſerved of late occaſionally in England.[n] Among other ſymptoms it is marked with great oppreſſion at the precordia. It reſembles Hydrophobia not only in this, but in ſome other ſymptoms. It is accompanied with great quickneſs and impatience; volubility and rapidity in converſation. The patient is quick both in comprehending and anſwering queſtions; his ſenſe of *hearing* and *taſte* become morbidly acute; the reverſe of which happens in the common typhus: his ſenſibility to cold air is alſo great; yet his heat meaſured at this time is no leſs than from 109° to 110° of Farenheit. Delirium conſiderable, but attended with intervals of calmneſs. The patient will riſe from bed, dreſs, and inſiſt on his being well. This the hydrophobic likewiſe does. This fever has never admitted of a cure in the inſtances hitherto obſerved, and the body runs ſpeedily into putrefaction after death.

The

[n] Vide Currie's Med. Reports, &c. edit. 1, p. 45.

The heat in hydrophobic patients, I believe, has never been meaſured in any more accurate manner than by contact of the hand. This omiſſion, by obſerving phyſicians, will doubtleſs, when an opportunity offers, be ſupplied. I regret our want of this information.

Between theſe ſeveral diſeaſes, this fever, that from inanition, as alſo thoſe proceeding from narcotics (opium, hemlock, laurel water, &c.) and Hydrophobia, we may trace ſome ſimilitude, a morbid condition of nerves beyond what is ſeen in other complaints. The analogy, diſtant as it is, deſerves notice. It may lead to important diſcoveries.

Dr. F. adduces Nugent's caſe as an illuſtration; and as an inſtance of a *cure* by large and repeated V. S. Elizabeth Bryant, indeed, was bled on Saturday to fifteen ounces; next day to twenty ounces, and on Monday to twelve ounces. She recovered; but was her caſe Hydrophobia? A fortnight after recovery, an officious perſon frightened her. The ſame diſeaſe recurred; ſhe was again bled; treated much as before, and again recovered. Agitation of mind from fear alone, both in the firſt and in the ſecond inſtance ſeems to have induced *hyſteric* convulſions, and all her other

ſymp-

ſymptoms. I wiſh Dr. Ferriar could have adduced a leſs exceptionable caſe in favour of V. S. as well as a proof of a cure in *rabid* Hydrophobia.

My plan would be to remove the debility exiſting by corroborants: he propoſes to do the ſame by depletion. Till experiments decide the value of our reſpective modes, each may be allowed to retain his opinion. In many caſes of true Hydrophobia V. S. has for ages been the practice. How unſucceſsfully employed may be ſeen from the following examples, as well as hundreds more, on record.

Dr. Maclean's patient bled to 16 ounces. Caſe I.

Mr. Raynbird's patient bled. Caſe II.

Mr. Freeman's patient bled to 6 oz. Caſe V.

Dr. Girdleſtone's patient bled to 12 ounces. Caſe VI. [VII.

Dr. White's 1ſt patient bled copiouſly. Caſe

Mr. Tuſon's patient bled to 10 oz. Caſe XI.

Dr. Odhelius's patient bled to 7 ounces. Caſe XV.

Mr. Dundas's patient bled. Caſe XXVII.

Mr. Babington's 1ſt patient bled to 20 oz. Caſe XXXI.

——— 2nd bled to 14 oz. Vide p. 546.

Mr.

Mr. Bathie's patient bled. Caſe XXXVI.
Dr. Fothergill's patient bled to 6 ounces. Caſe XXXVII. [XXXVIII.
Dr. Vaughan's firſt patient bled. Caſe
Dr. Raymond's patient bled. Caſe XLIV.
Dr. Rutherford's patient bled to 66 ounces. Caſe XLVI.
Mr. Nourſe's patient bled. Caſe XLVII.
Profeſſor Plummer's patient bled. Caſe XLVIII.
Dr. Mead's 2nd patient bled. Caſe LI.
——— 3rd bled. Caſe LII.
Dr. Howman's patient bled to 7 ounces. Caſe LV.
Dr. Liſter's patient bled. Caſe LVI.
Metzler's patient bled to 14 oz. page 533.

Theſe I give only as a few unſucceſsful caſes of V. S. Had this procured relief it muſt have been diſcovered ages ago, and Hydrophobia, as well as pneumonic inflammation, which generally yields to a proper uſe of the lancet, ceaſed to be fatal.

Dr. Ferriar finds one of the lobes of the lungs in his patient ſtuffed with blood: hence his concluſion of the preſence of inflammation in theſe parts. The venerable Boerhaave thought the ſame. That the blood is detained

in the centre, and does not reach the ſurface in due quantity is evident, from the pale colour of the external ſurface, and eſpecially from the morbid ſenſibility and horror to the contact of cold air. Arterial blood produces heat wherever it goes, and in ſome ratio to its quantity. Contractions in the heart or great arteries will detain the blood in the pulmonary ſyſtem: irregular action in this muſcle will give riſe to irregular diſtribution, and congeſtion muſt follow.[o] Irregular action of the diaphragm, an organ greatly affected in this complaint, which may be induced by ſympathy, or connection with the pericardium, may contribute to the ſame end. Such a caſe however of retenton of the blood differs widely from inflammation. Remove the cauſe, or reſtore the heart to regular action, and the blood will reſume its healthy courſe.

In the cold ſtage of an intermittent the blood does not reach the ſurface in proper quantity; it is retained near the centre; the heart, for a time, is deprived of power to repel it forwards, or ſpaſmodic ſtrictures exiſt in the ſmaller arteries depending on a debilitating

[o] Vide vol. 1, p. 246. Vol. 2, p. 30. Ibid, p. 547, note.

tating cauſe. Would blood let during this ſtruggle between the weakened power of the heart, and the reſiſtance given to its paſſage by the diſtant collapſed arteries, ſhorten the cold ſtage, or remove it? Not V. S. but a very different practice is ſucceſsfully followed. Should other caſes of Hydrophobia happen in Dr. F.'s neighbourhood I truſt, that the management will fall under his direction. I hope much from his ſagacity. I have been inſtructed by his obſervations, and profeſs for his abilities great reſpect.

Vol. II. *page* 41, *line* 4 *from bottom.*

"Mercury acting on the habit produces irritation." Dr. Ferriar, in conjunction with many reſpectable names, while he recommends V. S. for the cure of Hydrophobia, inculcates at the ſame time the uſe of mercury. If his theory of information be well founded, as far as mercury is antiphlogiſtic,[o] it may perhaps be indicated. It has never been exhibited in Hydrophobia with this intention, but generally under the idea of a ſialagogue, an alterative, a *ſpecific*. The reaſons which I have for rejecting it are given at ſome length under

[o] Vide Med. Comment. D. i. vol. 9, p. 191.

under their proper head;[n] and I have nothing farther to add, but my readineſs to yield to conviction the moment a caſe, where mercury has performed a cure, which can bear rational and unprejudiced examination, can be produced: till then I ſhall not remain in doubt only, but am perſuaded of its inutility. Dr. F. will, I think, agree with me in condemning it as a *preventive* of a diſeaſe not exiſting. When the diſeaſe does exiſt, and it is thought expedient to exhibit it, the time neceſſary for its operation (I ſpeak not of a cathartic) the rapid increaſe of ſymptoms, and ſpeedy termination in death leave little room for well grounded hopes from its uſe. Does it cure either ſymptomatic or idiopathic tetanus? So far as violent muſcular contraction, and nervous derangement exiſt, I admit the analogy between Hydrophobia and tetanus. I have too high a ſenſe of this able phyſician's merits and candour to ſuppoſe that the freedom of my remarks will be conſidered by him in any other light than as thoſe of a medical pathologiſt diſcuſſing doubts, and ſolicitous for truth; and though I cannot always coincide with him in the opinion either of the inflammatory nature of the diſeaſe,

[n] Vide Prevention and Cure.

eaſe, or in the utility of mercury, I am far from being offended with him for adopting them.

Vol. II. *page* 58, *line laſt.*

" Doſes of oil." Oil, from the heat of the ſtomach, very ſoon grows rancid, and from its acrimony, muſt induce both vomiting and purging if taken in any conſiderable quantity.

Dr. RODBARD.

Vol. II. *page* 64, *line* 6 *from bottom.*

" Without ſucceſs." A mad ſow is ſaid to have been cured by this remedy.[p] The creature was ſeized, we are told, with the diſeaſe on the 6th day after the bite. Being ſhut up immediately on being bitten, an opportunity was afforded for obſervation. The firſt ſymptom was refuſal to eat. She ſtood for three days with her head leaning on her food, without eating it. M. Beudon directed four pots of ſtrong warm vinegar to be let down through a hole in the ſtable where the creature ſtood; then ſtopped up the hole to prevent communication with the external air. About an hour after

[p] Vide Ferriar's Hiſt. and Reflections, vol. 3, p. 19.

after ſhe was obſerved to drink the vinegar with the greateſt avidity. This induced him to put a quantity of bran moiſtened with vinegar into her trough; it was all conſumed by the following day. The plan was purſued, and the animal, it is ſaid, recovered. Two dogs bitten with the ſow were cured by the ſame means.

This experiment muſt be more than once repeated before it can eſtabliſh the efficacy of vinegar as a cure.

Vol. II. *page* 70, 71.

"Opium uſeleſs in the largeſt doſes yet given." To the inſtances here related to ſupport this aſſertion may be added the large quantity given in a recent caſe (publiſhed ſince this was printed) communicated to the public by Dr. Babington.[b] 180 grains were exhibited in 12 hours in vain.

A ſecond caſe by Dr. Wavell affords another inſtance to ſupport the ſame concluſion.

Vol.

[q] Vide Med. Records and Reſearches, ſelected from the Papers of a Private Aſſociation.

Vol. II. *page* 91, *line* 2 *from bottom.*

"Iron in a greater proportion." The red colour of blood has generally been attributed to the preſence of iron. Cavallo doubts the truth of this opinion;[r] but Dr. Wells ſeems to have put the ſubject beyond farther diſpute, confirming by well-conducted experiments this philoſopher's doubts.[s] The concluſion appears at firſt view to have been haſty, that becauſe iron exiſted in this part of the blood the red colour muſt depend on it. Bones and wood contain iron, yet no redneſs is imparted. Minium again is red, yet it contains no iron. To the particular modifications of light paſſing through different media, or meeting with bodies of different capacities (Dr. W. thinks) this colour is to be aſcribed. If you expoſe blood in a cloſe veſſel, to a heat leſs than 112°, its red colour will be loſt, and cannot again be reſtored: but no metal, in a degree of heat under

[r] Vide Eſſay on Factitious Airs.

[s] Vide Phil. Tranſ. part ii, for 1797. Experiments by Dr. Wells.

under the boiling point, loſes its colour. If the colour of other bodies be deſtroyed by acids or alkalies, theſe will again reſtore them: no method can reſtore the red colour of the blood when once deſtroyed by acids or alkalies.

Vol. II. *page* 140, *line* 17.

"Followed in our own country." The practice ſtill unhappily continues; for even about three weeks ago an unfortunate patient, at Southmoulton in Devonſhire, through the ſame miſtaken notions ſuffered. "The malady increaſed ſo rapidly, that it became neceſſary to give him his *laſt ſleep*."[t]

This man, whoſe name was Baker, had been bitten by a mad dog about three months before, and the wound, at the time, was *cauterized;* a proof of the doubts which were ſuggeſted in their proper place, relative to the efficacy of this preventive mode.[u]

Vol. II. *page* 160, *line* 31.

"Eighth, ninth, and thirteenth." It is in the ninth book, line 239, where the word *lyſſa*, or

[t] Vide Lond. Chron. for Aug. 2, 1798.

[u] Vide vol. 1, p. 139.

or *lytta* is uſed, which has been tranſlated *rabies*, and applied to the dog; but it appears of little moment whether it be interpreted *madneſs* of a dog, or *rage* and fury of this animal, for the reaſons given in the text. The word however is original, not derived. Hederic. Lexicon, word luſſa.

Vol. II. *page* 162, *line* 7.

"Unknown to the ſame regions in former ages.' Sixty years ago pleuriſies were very frequent in this county, during the months of Jan. and Feb. but now are ſeldom known, owing to the uſe of a very different diet.

Dr. RODBARD.

Vol. II. *page* 165, *line* 13.

"Scarlatina." The frequency of this fever in Ipſwich has enabled me to trace it on ſeveral occaſions, I think, to its ſource, to the family where the infection originated. I have minutely inquired, whether they knew how the diſeaſe came; whether they had any intercourſe with perſons ill of it, and have been poſitively aſſured they had not. At this time it

was

was unknown in the neighbourhood. To trace it in the country is ſtill leſs difficult; the intercourſe with people is leſs. I have found it in a family in the country, and they knew not how it came. It has proved ſevere, and even fatal, and then was extinguiſhed, luckily without extending to others. From an experiment of Dr. Currie we have reaſon to believe, that this malady may be as much under our controul as the ſmall pox, and by means nearly ſimilar, the application of cold. The fever, Dr. C. is led to think, gives riſe to, and regulates the quantity of efflorescence. Nip the fever early in the bud, and the efflorescence, as well as the affection of the throat, will be prevented. The ſcarlet eruption will either be none, or very moderate. This is to be done, he thinks, principally by the affuſion of cold water.*

Vol. II. *page* 167, *line* 6.

"Old variolous matter." Two months and upwards, after the printing of this paſſage, Dr. Currie's Medical Reports came, for the firſt time,

* Vide Currie's Med. Reports, &c. edit. 1, p. 62.

time, into my hands, where I find with pleaſure, the ſentiment ſuggeſted here confirmed by his experience.

"On Feb. 2, 1792, I took a conſiderable quantity of this matter on a piece of window glaſs, keeping it as much together as its fluidity would admit. It was expoſed immediately to a ſtream of air, and the ſurface was ſpeedily dry. On March 2 following, after moiſtening a portion of it with a little water, I inoculated three patients, and all with ſucceſs. In the courſe of the ſummer I inoculated with another portion of it, previouſly liquified by the addition of warm water, and with ſucceſs as before. On the 20th of July, 1793, I again uſed a portion of the ſame matter in the ſame way, and again with ſucceſs; but this ſucceſs was long doubtful, and it was not till the twenty-ſecond day after the operation, that the patient ſickened. I uſed the ſame matter in June, 1794, when it entirely failed me. It is now by me and is not mouldy, nor any ways changed in its appearance. Variolous matter kept ſometime is certainly ſlower in producing the diſeaſe, even where it does ſucceed in the end."[w]

Vol.

[w] Vid Med. Reports, &c edit. 1. page 59. *note.*

Vol. II. *page.* 172, *line* 6 *from bottom of note.*

" Twenty-five of the oxygene to to about ſeventy-five of azote." Atmoſpherical air examined both ſynthetically and analytically by Lavoiſier is found to conſiſt of twenty-ſeven parts of oxegene and ſeventy-three of azote.[x]

Vol. II. *page* 203, *line* 10.

" Without any communication." Reſpecting ſituation it was very remarkable in Ipſwich, that in July 1764, after ſome very hot days, a cold eaſterly wind brought on a dyſentery which affected almoſt every perſon in thoſe ſtreets, which had a direction from eaſt to weſt.

Dr. Rodbard.

[x] Vide Elements of Chemiſtry.

ERRATA.

ERRATA.

Vol. 1, p. 273, line 3, after *is* dele more; after *frequent* dele than in our iſland.

Vol. II.

Page. Line.

2—10, for *have* read has.
5—3, for *porracious* read porraceous.
9—2 from bottom, for *mucus* read mucous.
14, for *looſe* read loſe.
15—4 from bottom, for *and even* read even with.
20—14, for *chryſtalized* read cryſtallized.
22—laſt, for *diſſolve* read diſſolve.
23—*note*, read Satius eſt enim anceps auxilium experiri, quam nullum. Celſ. lib. 2, cap. x.
24—4, for *their* read the.
26—laſt, for *trod* read trodden.
33—for *Rubifacients* read Rubefacients—*paſſim.*
41—2, after *of* dele it.
46—19, for *juventia* read juvantia.
47—*note*, for *lectures* read lecture.
52—*note*, for *Simms* read Sims.
55—*note*, for *Simms* read Sims.
63—6 from bottom, for *in* read over.
72—laſt, *note*, for *wants* read we want.
85—5, for *hybro-carbonate* read hydro-carbonate.
110—laſt, *note*, after *manganeſe* dele to ſubſide.
147—16, for *practiſes* read practices.
180—9, for *practiſe* read practice.
186—3 from bottom, for *commixion* read commixtion.
188—7, for *theſe* read thoſe.
17, for *concommitant* read concomitant.
189—4, for *infection* read infection.
191—4 *note*, for *towards* read to.
192—8 from bottom, for *ſhall* read ſhould.
193—4 from bottom, after *coldeſt* read day.
205—3, for *would* read ſhould.
206—1, for *equal* read equally.
3, for *and* read or.
7, for *rotine* read routine.
212—1, for *here* read there.
215—8, for *was* read is.

Page Line

228—8, for *it* read he.
9, for *its* read his.
10, for *its* read his.
13, for *its* read his.
231—2, for *dog's* read dogs.
235—laſt, after *more* read eaſily.
241—14, after *in* read his.
243—3, after *them* read as.
253—4, for *cerous* read ſerous.
260—8 from bottom, after *are* read by many miſtaken peo[ple
265—4, for *generally* ~~read~~ ~~for the moſt~~ part.
267—2, after *denomi* add a hyphen.
296—14, after *reflections* dele (,) for *and* read an.
297—11, after *but* read of.
314—laſt, for *fighing* read ſighing.
317—4 from bottom, after *clergy* read were.
324—4, for *tendenous* read tendinous.
338—1, for *ſprightfulneſs* read ſprightlyneſs.
347—9, after *glaſs* read of.
360—14, after *her* read to.
418—2, for *turigd* read turgid.
452—3, for *odematous* read œdematous.
459—7, for *pedilurium* read pediluvium.
495—7, for *chariti* read charity.
500—19, for *ſphacellation* read ſphacelation.
515—8, for *exciſſion* read exciſion.
523—1, for *ſhould* read would.
532—15, for *increaſed* read difficult.
534—*note*, for *of propagating* read to propagate.
535—3, for ~~*ſeldomer*~~ ~~read~~ leſs frequently.
3 from bottom, for *flock* read drove.
539—12, for *Pareus* read Parè
16, for *Heroditus* read Herodotus.
26, for *Joam* read Joan.
540—2, for *Valenianus* read Valerianus.
10, for *Amatus Lautonus* read Aichholtzius.
19, for *Greviorus* read Grevinus.
21, for *Anamal.* read Animal.
550—3 *note*, for *active* read the diſplay of great.
553—9, for *irraſcible* read iraſcible.
555—6, for *which* read whom.
ii—10, for *leiſon* read leſion.
iv—12, for *Cicily* read Sicily.
xviii—4, for *propogated* read propagated.
7, for *precordia* read præcordia.

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